

YEAR – I				
Semester I	L-T-P-C	Winter Break	Semester II	L-T-P-C
Mathematical, Algorithmic, and Computational Thinking	3-1-0-4		Functions of Single Variable and ODEs	3-1-0-4
Computer Organization and Programming Computer Organization and Programming Lab	3-0-0-3 0-0-4-2		Object Oriented Programming	2-0-2-3
Discrete Mathematics	3-1-0-4		Data Structures and Algorithms	3-0-2-4
Digital Logic Design	1-0-2-2		Linear Algebra	3-1-0-4
Language and Literature	3-0-0-3		Approaches to Indian Society	3-0-0-3
<b>Semester credits</b>	<b>18</b>		<b>Semester credits</b>	<b>18</b>

YEAR – II				
Semester III	L-T-P-C	Winter Break	Semester IV	L-T-P-C
Probability and Random Processes	3-1-0 –4	R U R A L Internship	Mathematical Statistics	3-1-0 –4
Operating Systems	3-0-2 –4		Theory of Computation	3-1-0 –4
Design and Analysis of Algorithms	3-1-0 –4		Parallel and Distributed, Algorithms	3-1-0 –4
Functions of Several variables and PDEs	3-1-0 –4		Real and Complex Analysis	3-1-0 –4
Database Management Systems	3-0-2 –4		Numerical and Computational Methods	3-0-2 –4
Science, Technology, Society	3-0-0 –3		Environmental Studies	2-0-0 –2
<b>Semester credits</b>	<b>23</b>		<b>0-0-8–4</b>	<b>Semester credits</b>
Summer – II				

YEAR - III				
Semester V	L-T-P-C	Winter Break	Semester VI	L-T-P-C
Mathematical Optimization	3-1-0-4		Machine Learning	3-0-2-4
Modelling and Simulation	3-0-2-4		Open Elective - 1	3-0-0-3
Algebraic Structures	3-1-0-4		MnC Elective - 3	3-0-0-3 / 3-1-0-4 / 3-0-2-4
Principles of Economics	3-0-0-3		MnC Elective - 4	3-0-2-4 / 3-1-0-4 / 3-0-0-3
MnC Elective - 1	3-0-2-4 / 3-1-0-4 / 3-0-0-3		MnC Elective - 5	3-0-2-4 / 3-1-0-4 / 3-0-0-3
MnC Elective - 2	3-0-2-4 / 3-1-0-4 / 3-0-0-3		Independent Project - 1/ MnC Elective - 6	0-0-6-3 3-0-2-4 / 3-1-0-4 / 3-0-0-3
<b>Semester credits</b>	<b>21-23</b>		<b>Semester credits</b>	<b>19-23</b>
Summer - III : Summer Research/Industrial Internship (0-0-12-6)				

YEAR - IV				
Semester VII	L-T-P-C	Winter Break	Semester VIII	L-T-P-C
MnC Elective - 6 / Independent Project - 1	3-0-2-4/ 3-1-0-4/ 3-0-0-3 0-0-6-3		MnC Elective - 10 / BTP-1	3-0-2-4/ 3-1-0-4/ 3-0-0-3 0-0-8-4
MnC Elective - 7	3-0-2-4/ 3-1-0-4/ 3-0-0-3/		BTP-2	0-0-18-9
MnC Elective -8	3-0-2-4/ 3-1-0-4/ 3-0-0-3			
Open Elective - 2	3-0-0-3			
MnC Elective - 9	3-0-2-4/ 3-1-0-4/ 3-0-0-3			
Independent Project - 2 / MnC Elective - 10 / BTP - 1	0-0-6-3 3-0-2-4/ 3-1-0-4/ 3-0-0-3 0-0-8-4			
<b>Semester credits</b>	<b>18-23</b>		<b>Semester credits</b>	<b>12-13</b>

### Representative list of electives

- > Graph Theory and Algorithms
- > Approximation Algorithms
- > Computational Complexity
- > Randomized Algorithms
- > Quantum Computing
- > Introduction to Cryptography
- > Blockchain and Cryptocurrencies
- > Adversarial Machine Learning
- > Machine Learning and Security
- > Introduction to coding theory and Applications
- > Data Mining and Visualization
- > Human Computer Interaction
- > Natural Language Processing
- > Network Science
- > Time Series Analysis
- > Software Engineering
- > Hypothesis Testing
- > Multivariate Statistics
- > Bayesian Analysis
- > Financial Data Analysis
- > Machine Learning in Finance
- > Stochastic Simulation
- > Dynamical Systems
- > Computational Number Theory
- > Fluid Dynamics
- > Game Theory
- > Queuing theory
- > Operations Research
- > Functional Analysis
- > Stochastic calculus for finance
- > Computational Finance