

B. Tech. (Electronics & Communication Engineering)

Semester Ist

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE111	English	4	0	4
2	BTECE121	Physics-I	4	0	4
3	BTECE131	Chemistry-I	3	2	4
4	BTECE141	Maths –I	4	0	4
5	BTECE151	Fundamentals Of Computer	3	2	4
6	BTECE161	Workshop	3	2	4
7	BTECE171	Engg. Drawing	3	2	4

Semester IInd

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE112	Thermodynamics	4	0	4
2	BTECE122	Physics-II	3	2	4
3	BTECE132	Chemistry-II	4	0	4
4	BTECE142	Maths –II	3	2	4
5	BTECE152	Computer Programming I	0	8	4
6	BTECE162	Workshop	3	2	4

Semester IIIrd

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE211	Electrical Science – I	4	0	4
2	BTECE221	Maths – III	4	0	4
3	BTECE231	Computer Programming – II	3	2	4
4	BTECE241	Mechanics of Solids	4	0	4
5	BTECE251	Technical Report Writing	4	0	4
6	BTECE261	Analog Electronics-I	3	2	4

Semester IVth

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE212	Structure and properties of material	4	0	4
2	BTECE222	Analog Electronics-II	3	2	4
3	BTECE232	Electrical Science -II	4	0	4
4	BTECE242	Data Structure & Algorithms	3	2	4
5	BTECE252	Digital Electronics	3	2	4
6	BTECE262	Principle of Management	4	0	4
7		Practical Training (30 Days)			

Semester Vth

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE311	Optimization	4	0	4
2	BTECE321	Microprocessor Programming & Interfacing	3	2	4
3	BTECE331	Communication Systems	3	2	4
4	BTECE341	Electronic Devices & Integrated Circuits	3	2	4
5	BTECE351	Control System	4	0	4
6	BTECE361	Electronic Fields & Waves	4	0	4
7	BTECE371	Computer Organization & Architecture	4	0	4

Semester VIth

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE312	Digital Communication	3	2	4
2	BTECE322	Power Electronics	4	0	4
3	BTECE332	Circuit & Signals	4	0	4
4	BTECE342	Computer Network	4	0	4
5	BTECE352	Numerical Analysis	4	0	4
6	BTECE362	Operation Research	4	0	4
		Practical Training (45 Days)			

Semester VIIth

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE411	Real Time Systems	4	0	4
2	BTECE421	Wireless Communication	4	0	4
3	BTECE431	Digital Signal Processing	4	0	4
4	BTECE441	Analog and Digital VLSI Design	4	0	4
5	BTECE451	Microwave Engineering	4	0	4
6	BTECE461	Telecommunication Switching Systems Networks	4	0	4

Semester VIIIth

Sr.No.	Code	Name of Subject	L	P	U
1	BTECE421	Practical Training for 6 Month a. Project b. Seminar			

Semester 1st

Sr. NO.	Code	Name of Subject
1	BTECE111	General English

The above two unstructured courses are designed to raise progressively the level of proficiency of the normal input to a stage where they can embark on English language and literature. They are intended to develop the language skills of listening, speaking, reading and writing. No student will be permitted to register in more than one course at a time. The presentation of the skills courses in the present break-up is not intended to indicate any sequence. It simply indicates the total number of units and the related number of hours spent in the course through formal contact or self-study only. Thus a student can begin at any one of the courses with the requirement that for the normal input only one (or two) of these courses would be needed. From the description presented above it would be clear that students may register in any one (or both) of these courses with the proviso that registration can be done in only one course per semester.

2	BTECE121	Physics 1 st
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1. **Interference:** - Interference of light, theory and methods of measurement of wavelength uses Fresnel's biprism, Newton's rings, Michelson interferometer, conditions of interference.
2. **Diffraction:** - Fronhofer diffraction at a single slit, theory and method of measurement of wavelength by plane transmission grating, diffraction of X – Ray, Bragg's law, resolving power, resolving power of diffraction grating.
3. **Polarization:** - Introduction, important definitions, Production of polarization, detection of circular & elliptically polarized light.
4. **Rotational dynamics:** - Torque, Newton's second law & rotational inertia, equilibrium & non equilibrium applications of Newton's law.
5. **Oscillation:** - Oscillating systems, S.H.M, S.H.M. oscillator, energy in S.H.M, application of S.H.M. the torsional oscillator, simple pendulum.
6. **Wave motion:** - Mechanical wave types of waves, wave speed on a stretched string, mechanical analysis, group speed, the wave equation.
7. **Reflection:** - Reflection from dielectric, internal reflection, phase change by reflection, metallic reflection.

8. **Refraction:** - Refractive index, law of refraction, graphical construction for refraction.

3

BTECE131

Chemistry 1st

This is the first of a sequence of a sequence of two courses aimed at providing an integrated overview of chemistry. Topic to be discussed will include : nuclear chemistry : electronic structure of atoms : molecular structure and chemical bonding : chemical thermodynamics: phase and chemical equilibrium electrochemistry: chemical : phase and chemical equilibrium: electrochemistry: chemical kinetics

4

BTECE141

Maths 1st

Functions and graphs; limit and continuity; applications of derivative and integral. Conics; polar coordinates; convergence of sequences and series. Maclaurin and Taylor series. Partial derivatives. Vector calculus in R^n ; vector analysis; theorems of Green, Gauss and Stokes.

5 **BTECE151**

Fundamentals of Computer

Introduction : Classification of computer and generation, Basic architecture of computer and its building blocks, Input devices, Computer memories.

Number System : Binary, Octal, Decimal, and Hexadecimal representation of characters : ASCII and EBDIC codes, Binary arithmetic and logic circuit.

Classification of Computer language : Machine, Assembly and High level language, Brief idea of operating system, Assembler, Compiler and interpreter.

Fundamentals of computer programming : Problem solving through computer algorithms and flow chart level of programming.

Operating system : Introduction to O.S., Types of operating system, Multiprogramming, Timesharing, Batch, Real time and UNIX

Internet : Introduction to internet, Components, Services and working on interne,
introduction to protocols, tools.

6 **BTECE161**

Workshop Practice

Study & Perfome on various M/C . Conducting job work by using various M/C, Cutting tools, equipments& hand tools i.e. files, chisels, hacksaw, right angle, marking tools measuring tools, etc.

Programming techniques, review of programming languages useful to civil engineering works, structural analysis concepts, modeling of problems, relation between elements and systems, programming with and flexibility and stiffness matrix displacement plain stress/strain problems, eigen value problems, programming for pre and post processor, civil engineering computer projects.

Semester 2nd

1

BTECE112

Thermodynamics

Concepts and laws of thermodynamics; macroscopic thermodynamic properties; application to closed and open system; microscopic approach to entropy; equations of state; thermodynamics of nonreacting mixtures.

2

BTECE142

Physics 2nd

Electric field, electric field of point charges, electric field due to continuous charge distribution, electric field lines, electric dipole, dipole moment, electric field due to electric dipole on axial and equatorial line.

1. **Magnetic field:** - Magnetic interaction and poles, magnetic force on moving charge, circulating charges, Hall Effect, electric current.
2. **Electromagnetic Induction:** - Faraday's experiments, Faraday's laws of induction, Lenz's law, motional e.m.f. generator and motor (ac & dc)
3. **Maxwell's Equations:** - Equation of continuity, Maxwell's basic equations and their derivation.
4. **Electromagnetic waves:** - Induced magnetic field, and displacement current, generating in electromagnetic wave, traveling wave, properties and uses of electromagnetic wave.
5. **Atomic Structure:** - Bohar's model, atomic structure, uncertainty principle, particle duality.

3

BTECE122 Chemistry-2nd

Representative topics from inorganic and organic chemistry will be discussed to expose the student to the logic and systematics of these areas, keeping in view the general principles introduced in the first course. Topics will include: stereo isomerism: important classes of organic reactions such as nucleophilic aliphatic sub situation, elimination, electrophonic addition, free redi.

4

BTECE132

Maths-2nd

Complex numbers, analytic functions, Cauchy's theorems; elementary functions; series expansions; calculus of residues and applications. Vector space; basis and dimension; linear transformation; range and kernel of a linear transformation; row reduction method and its application to linear system

- 5 BTECE162 Computer Programming –I (C Language)**
- 1. Introduction :**
 - a. Scope of C Language
 - b. Distinction and similarities with other HLLs
 - c. Special features and Application areas
 - 2. Elements of C**
 - a. Character Set
 - b. Key Words
 - c. Data Types
 - d. Constants and Variables
 - e. Operators unary, binary, ternary
 - f. Operator precedence
 - 3. Console Input-Output**
 - a. Types of I-O
 - b. Unformatted console I-O: getchar(), Gets(), Puts(),
 - c. Formatted I-O : Scanf(), Printf()
 - 4. Control Flow :**
 - a. Statements and blocks
 - b. if
 - c. Switch
 - d. Loops : For, While, Do-While
 - e. Go to and labels
 - 5. Arrays :**
 - a. Basic Concepts
 - b. Memory Representation
 - c. One Dimensional Array
 - d. Two Dimensional Array
 - e. Three Dimensional Array
 - 6. Functions :**
 - a. Basic concept
 - b. Declaration and prototype
 - c. Calling
 - d. Arguments
 - 7. Pointers :**
 - a. Basic Concepts
 - b. &,* operator
 - 8. Structure, Union and Enumerated Data Types**
 - a. Basic Concepts
 - b. Declarations and Memory Map
 - c. Elements of Structures
 - 9. File Handling :**
 - a. Types of Files
 - b. File Organization
 - c. Opening, Reading, Writing, Closing

Study & Perform on various M/C . Conducting job work by using various M/C, Cutting tools, equipments & hand tools i.e. files, chisels, hacksaw, right angle, marking tools measuring tools, etc.

Semester 3rd

1

BTECE211

Electrical Science-1st

Introduction; basic circuit elements; sources (dependent and independent); Kirchoff's current and voltage law, source representation and conversion; Network theorems; response of RL, RC and RLC circuits; diodes and its applications; transistors - BJT & FETs; amplifiers: biasing and small signal analysis; OPAMPS; Digital Logic gates; Basics of Combinational and Sequential circuits.

2

BTECE221

Maths-3rd

Complex numbers, analytic functions, Cauchy's theorems; elementary functions; series expansions; calculus of residues and applications.

Vector space; basis and dimension; linear transformation; range and kernel of a linear transformation; row reduction method and its application to linear system of equations.

3

BTECE231

Computer Programming-II

Overview of programming languages concepts and constructs, programming paradigms; Introduction to compiler process, phases and passes, bootstrapping of compilers; Formal languages, grammars and abstract machines; Lexical analysis, regular expressions and finite automata; Context-free grammar and push-down automata; Recursive-descent, LL and LR parsers; Semantic analysis, attribute grammar, type checking, intermediate representation; Run-time environments; Code optimization and code generation.

4

BTECE241

Mechanics of Solids

Fundamental principles of mechanics; introduction of mechanics of deformable bodies; forces and moments transmitted by slender members; stress and strain; stress-strain-temperature relations; torsion; stresses and deflections due to bending; stability of equilibrium.

Grammars:

- A. Review of English grammar
 - 1. Use of articles
 - 2. Use of models
 - 3. The conjunction
 - 4. Tenses (Present, Past, Future and its further forms)
 - 5. Active/Passive voice
 - 6. Reported speech
 - 7. Subject – Verb concur

1. Communication Skills**A. Reading**

- 1. Technique of reading with special emphasis on pronunciation
- 2. Division of passage into different parts according to contents, thoughts, keeping in view the comprehension questions given beneath the passage.
- 3. Practice of answering comprehensive questions.

B. Writing

Letter writing

- 1. Types of letters
- 2. Writing of different types of letters (special emphasis to formal and business letters)

C. Essay writing/Paragraph writing

- 1. Practice of topics/Hit based essays
- 2. Practice of writing essay on the given topic to augment the emanative power and knowledge.

D. Précis writing :**E. Notice writing/Telegram writing**

- 1. Contents of the notice
- 2. Practice of writing different types of notice.

G. English language lab -

- 1. Holding seminars and organizing workshops on the language.
- 2. Presentation and group

UNIT-I- Semiconductors and transport phenomenon in Semiconductors:-

Introduction of insulators, conductors, semiconductor materials energy band gap of materials, types of Semiconductors, mobility and conductivity, Hall Effect, generation and recombination of charges, diffusion.

UNIT-II-Junction Diode characteristics:-

P-N junction, V-I characteristics, diode resistance, transition and diffusion capacitance, types of diodes such as Tunnel diode, varactor diode, Schottky diode, LED etc.

UNIT-III-Transistors and their characteristics:-

The junction transistor, transistor current components, transistor as an amplifier, common emitter (CE) configuration, common-base (CB) configuration, common-collector (CC) configuration.

UNIT-IV- Rectifiers and transistors at low frequencies:-

- (a)-Introduction to rectifiers, half wave rectifiers, full-wave rectifiers.
- (b)-Transistor hybrid model, h-parameters.
- (c)-Operating point, BIAS stability.

3

BTECE232

Electrical Science II

Introduction; sinusoidal steady state analysis of circuits; three phase circuits; magnetic circuits; transformers; basics of rotating machines; DC machines; synchronous machine; induction machine.

4

BTECE242

Data Structure & Algorithms

Introduction to software design principles, modularity, abstract data types, data structures and algorithms; Analysis of algorithms; Linear data structures – stacks, arrays, lists, queues and linked representations; Prefix, in-fix and post-fix expressions; Recursion; Set operations; Hashing and hash functions; Binary and other trees, traversal algorithms, Huffman codes; Search trees, priority queues, heaps and balanced trees; Sorting techniques; Graphs and digraphs; Algorithmic design techniques; Data structures for external storage, multi-way search and B-trees.

5

BTECE252

Digital Electronics

1. Number System and code: Weighted code, non-weighted code, Radix and Radix conversion, Sign and Magnitude representation, Complement Notation. Fixed-point arithmetic: BCD addition, subtraction, multiplication and division.
2. Boolean algebra and digital logic gates: Features of logic algebra, Postulates and theorem of Boolean algebra. Boolean function, Derived logic gates, exclusive OR, NAND, NOR gates, their block diagram and truth table, Logic gate conversion.
3. Minimization techniques: Min term, max-term, K-map up to 4 variables, Simplification of logic function with k-map, Conversion of truth tables in POS and SOP form, variable mapping.
4. Combinational and Sequential systems: Combinational logic circuit design, half and full adder, subtractor, binary serial and parallel adder, BCD adder, Binary decoder BCD to Decimal, BCD to 7 segment decoder, Mux, De-mux, encoder.
Latches, Flip-Flops, R-S, D, J-K, T Flip-Flops, Master Slave Flip-Flops, Counters, Asynchronous registers, Counters.

6

BTECE262

Principles Of Management

Production & operations management functions; capacity requirement planning; inventory control; layout, handling & location decisions; resource procurement & operation control; project scheduling & resource allocation; the production & operating function; methods of forecasting demand; financial analysis of operating plans; determination of economic order quantity; development of efficient work methods, quality control, management of R&D, technological forecasting, equipment replacement and interfaces with other functional areas

7

Practical Training –I

(30 Days)

Semester 5th

1

BTECE311

Optimization

Optimization of functions of one and many variables with and without constraints; Kuhn-Tucker conditions; gradient methods; linear programming; simplex based and integer programming methods; duality theory; transportation and assignment problems; dynamic programming; branch and bound methods; models of linear production systems, sequencing and scheduling, PERT, CPM

2

BTECE 321

Microprocessor Programming & Interfacing

1. Introduction: Address bus, data bus and control bus, Input/Output devices. Buffers, encoders, Latches and memories.
2. 8085 micro-processors Instructions and Architecture: Internal data operations and registers, Pins and signals, peripheral devices, and memory organization, interrupts, classification format and timing instruction set, programming and debugging, 8-bit, 16-bit instruction.
3. 8085 micro-processor interfacing: 8259,8257,8255,8251 chips and their applications. A/D conversion, memory keyboard and display interface.
4. Introduction to 8051 micro-controller: Memory timers and interrupts, Instruction set and pin details, interfacing and applications.

Unit – I Introduction to electronics communication system : Introduction electronic communication system frequency spectrum of EM waves, modulation , bandwidth and information capacity, transmission.

Noise :- Internal noise (Thermal , shot, transit time Miscellaneous); External noise calculation Noise figure; Noise temperature.

Unit – II Amplitude modulation systems : Transmission (principle, spectrum, efficiency, power and current calculation) Am envelope , Am modulator circuits, Am transmitters QAM, Am receiver . Low noise amplifier, automatic gain control circuit;
Single side band communication : single sideband system AM SSB Full carrier , AM SSB Reduced carrier , AM. SSB suppressed carrier, Am vestigial sideband single sideband single sideband generation methods, single sideband transmitter.

Unit – III Angle modulation system : Mathematical analysis deviation sensitivity . wave forms, phase deviation and modulation index, frequency analysis of angle modulated system, preemphasis and deemphasis Generation of FM waves, Demodulation of FM waves, angle modulator , vs amplitude Modulation.

Unit - IV Pulse analog modulation, Nyquist's theorem : Practical Sampling, PAM, PWM and PPM Generation and demodulation, noise calculation in communication system.

Unit I

Classification of IC: electronics grade silicon, Czochralski and hot zone crystal growing methods, oxygen and carbon in silicon vapor phase epitaxy.

ICs fabrication: oxidation thermal dry and wet, lithography, Photovaric

ICs Packages: Integral circuit package types ,PIN identification and temperature ranges.

Unit II

Ion implantation, Metallization, ohmic contact

Integrated element: Isolation of circuit elements ,

Bipolar technology: NPN transistor, PNP transistor, Integrated diodes ,semiconductor resistors, capacitor, inductors, MOS technology, NMOS and CMOS IC technology.

Unit III

OP-AMP and its applications: Introduction, operation amplifier, Block diagram representation of a typical Op-amp. Analysis, Integrated circuits and types. Ideal Op-amp And their equivalent circuits. Ideal voltage transfer curve ,open loop op-amp configuration. The differential amplifier, inverting amplifier,

Op-amp with –ve feedback: Introduction , Block Diagram, voltage series feedback amplifier ;negative feedback, closed loop voltage gain , difference input voltage ideally zero,

input and output resistance with feedback ,voltage shunt feedback amplifier with one and two op-amps.

Summing, scaling, averaging amplifier the integrator and the differentiator.

Unit IV

Active filters: Introduction, active filters , first and second order low pass butler worth filter (filter design) ,. first and second order High pass butler worth filter , band pass filter, band rejection filter ,all pass filter.

Oscillators: Introduction, oscillators' principle, types and frequency stability phase shift oscillators , wein bridge oscillators, quadrature oscillator ,square wave generator, triangular and saw tooth wave generator.

5

BTECE351

Control System

Unit I

Concept of Control System:

Examples and application of open loop and closed loop system, Differential equations
Determination of transfer function by block diagram reduction technique and signal flow graph methods

Unit II

Time Response Analysis and frequency Domain Method

Study state error & error specification in frequency domain and their Co-relation with time domain.

Unit III

Stability of the System:

Absolute Stability and Relative Stability, Routh, s Stability Criterion, Hurwitz criterion Root locus Method of analysis, Polar plots Nyquist stability criterion, M and N loci, Nicholas Chart.

Unit IV

Z transform and digital Control System, Concept of State Variable and State Model. Solution of state equation. Concept of Controllability & obserability

6

BTECE361

Electronic Fields & Waves

Unit 1

Electromagnetic Theory: Review of scalar and vector field, Dot and Cross products, coordinates cylindrical, spherical etc. Vector

representation of surface, physical interpretation of gradient divergence and curl, different coordinated systems.

Unit II

Electrostatic fields: Electric field due to point-charges, line charges and surface charges, Electrostatic potential, Solution of Laplace and Poisson's equation in one dimension, M-method of image applied to plain boundaries. Electric flux density, Boundary conditions, Capacitance, Electrostatic energy.

Ampere's law of force, Magnetic flux density, Ampere's circulate law, Boundary conditions, Faraday's law, Energy stored in magnetic fields.

Unit III

Continuity equations, Displacement current, Maxwell's equation, Boundary conditions, Plane wave equation and its solution in conducting and non conducting media, Phasor notation, Phase velocity, Group velocity, Depth of penetration Conductors and dielectrics, Impedance of conducting medium. Polarization, Reflection and refraction of plane waves at plane boundaries, Poynting vectors, and Poynting Theorem.

Unit IV

Transmission line equations, Characteristics impedance, Distortion-less lines, Input impedance of a loss less line, Open and Short Circuited lines, Standing wave and reflection losses, Impedance matching, Application of smith chart.

Number systems and machine representation, Boolean algebra, combinational and synchronous sequential circuits, logic minimisation, programmable logic devices, state table and state diagrams, digital integrated circuits, asynchronous circuits, arithmetic operations and algorithms, introduction to computer organisation and architecture, speed considerations, memory organisation, I/O design, implementation issues. The course will also consist of laboratory practice.

UNIT-1 Introduction to signal and system->

Introduction,signals,classification of signal, general signals,systems,classification of system, linear time invariant system, classification of linear time invariant (LTI) system, properties of LTI system.

UNIT –2 Continuous and Discrete time Fourier series->

Introduction,fourier series representation of a discrete time and continuous time periodic signal,convergence of fourier series, properties of continuous and discrete time fourier series, trigonometric fourier series ,evaluation of fourier series coefficients, wave form symmetry,half wavesymmetry, continuous and discrete time fourier transform,properties of continuous and discrete time fourier transform.

UNIT -3 Laplace and z-transform->

Introduction to laplace transform,definition of laplace transform,Inverse laplace transform,properties of laplace transform,the region of convergence for the laplace transform, Introduction to Z- transform,definition of Z- transform,properties of Z-transform,the region of convergence for the Z-transform of a discrete time signal, Inverse Z- transform.

UNIT-4 Sampling->

Introduction to sampling process ,sampling of continuous time signal, sampling theorem for continuous time signal impulse train sampling of continuous time signals,zero order hold sampling,reconstruction of continuous time signal from its samples using interpolation techniques, alasing phenomenon,discrete time processing of continuous time signals,discrete time decimation.

4

BTECE 342

Computer Networks

Evolution of communication and computer networks, protocol layering, network reference models, multiple access protocols, local area networks, packet and circuit switching, switching fabrics, network performance analysis and simulation techniques; addressing, routing, flow and congestion control, IP protocol; Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM) reference models; network interoperability, traffic management and quality of service in integrated network protocol design and implementation strategies

5

BTECE 352

Numerical Analysis

Solution of non linear algebraic equations, Interpolation & Approximation, differentiation & integration, system of linear equations, Eigen values & Eigen vectors problems, round off and conditioning.

6

BTECE 362

Operation Research

Correlation & regression analysis, queueing theory, deterministic & probabilistic inventory systems, simulation, decision theory, sampling, design of experiments & analysis of variance, non parametric tests, Markov analysis. S

7

Practical Training

(45 Days)

Semester 7th

1

BTECE411

Real Time Systems

Introduction to real-time systems, clock synchronization, task assignment and scheduling, programming language with real-time support, ADA, real-time communication protocols, real-time databases, fault tolerant techniques, reliability evaluation methods; case studies in real-time operating systems, simulation of real-time systems, embedded system programming.

2

BTECE421

Wireless Communication

UNIT-1

Introduction to cellular mobile systems, A basic cellular system,

Performance criterion, operation of cellular systems, overview of generation of cellular systems.

Elements of cellular radio systems, Design and interference, Concept of frequency reuse channels, co-channel interference, reduction factor, desired C/I from a normal case in an omni directional antenna system, cell splitting consideration of the components of cellular system.

UNIT-2

Cell coverage for signal and antenna structures, general introduction, obtaining the mobile point to point mode, propagation over water or flat open area, foliage loss, propagation near in distance, cell site, antenna height and signal coverage cells, frequency management & channel assignment, handoff and dropped calls, frequency management, fixed channel assignment, traffic and channel assignment, need of hand off, types of hand off and their characteristics, dropped calls rates and their evaluation.

UNIT-3

Modulation methods and coding, introduction to digital modulation techniques, modulation method in cellular wireless system, multiple access techniques: FDMA, TDMA, CDMA.

UNIT-4

Second generation, digital wireless system, GSM, IS-136(D-amps), IS-95, mobile management, voice signal processing and coding.

2

BTECE431

Digital Signal Processing

Unit I

Discrete –Time Signal and System

Introduction, Discrete-Time signal Sequences (Basic Sequence, Sequence operation

Discrete-Time systems (Memory less system, linear, system, time invariant system, stability)

Unit II Discrete and fast Fourier transforms

Introduction Discrete convolution, Discrete –time Fourier Transform (DTFT)

Fast Fourier transform (FFT), Computing an inversion DFT by Doing a direct DFT,

Composite radix FFT, Fast Convolution

Unit III

Finite impulse response (FIR) Filters

Introduction, magnitude Response and phase Response of Digital; filter, frequency response of linear Phase FIR Filters Design Techniques Filters Basic Structure of FIR Filters.

Unit IV

Infinite impulse Response (IIR)

Introductions, IIR Filter Design by approximation of Derivations IIR Filter Design by Impulse invariant methods, IIR Filter Design by the bilinear transformation, Butterworth filters, inverse chebyshev filters, basic structure of IIR filters

4

BTECE441

Analog and Digital VLSI Design

Unit I

Evolution of VLSI, MOS Transistor theory, MOS Structure, Enhancement & Depletion transistor, threshold Voltage, MOS Device design equations. CMOS inverter, DC-characteristics, static load MOS inverter, CMOS & NMOS Process technology, explanation of different stages in fabrication.

Unit II

Switching Characteristics & interconnection effect, Rise time, falltime delays, Inverter design with delay Constants, CMOS logic gate design, Fan in, Fan out, Typical NAND, NOR, delay Transistor sizing XOR and XNOR gates

Unit III

Closed CMOS logic, pass transistor logic domino, zipper CMOS, Clocking strategies, clocked system, latches & Registers, system timing set up & hold timing, signal phase memory, Two phase memory .

Unit IV

Two phase logic structure, four phase memory logic structure ,Introduction of VLSI-designing methodology ,VLSI –Design flow, Design Hierarchy concept of regularity, modularity & locality, VLSI Design style, design quality, computer aided design technology Design Capture and Verifications tools

4

BTECE451

Microwave Engineering

UNIT-1

Microwaves:- Introduction, area of application, with review of Maxwell's equation.

Wave Guide: Rectangular, cylindrical wave guide, solution of wave equation, modes and field pattern;

Propagation properties: power transmission; power losses, excitation of modes.

UNIT- 2

Components & elements:- S- parameter; joint, bends, screws, short- circuit, attenuation, cavity, resonator(cylindrical and rectangular), frequency meter, Hybrid couplers, magic tees, faradays rotation circular, phase shifter.

Uwavetube :-klystron amplifier ,reflex klystron, magnetron,cylindrical;overview of TWT, CFA

UNIT- 3

Microwave solid state and MICS: M/W bipolar transistor, varactor and tunnel diode, gun diode, construction, operation and practical application of PIN diode, schottky Diode, IMPATT, TRAPTT.

Introduction of MICS and fabrication of MICS, introduction of u-stripline, parallel stripline, coplanar striplines, shielded striplines

Slot lines.

UNIT-4

Introduction to u-wave detector, mixers, switchers, u-wave measurement (measurement of frequency, power attenuation, phase shifter, VSWR, input impedance)
u-wave filters

6 BTECE461 Telecommunication Switching System & Networks

UNIT –I

Introduction to telecommunication networks, Overview of network structure and services, Evolution of basic switching, Control of switching system.

UNIT-II

Stronger switching system, Rotary Dial phone, signaling tones, step by step switching, cross bar switching, electronic space division switching, time division switching

UNIT-II

Traffic Engineering: Network traffic load and parameters, grade of service and blocking probability, incoming traffic and service time characteristics

Radio System : LOS, Microwave communication, link behaviour, antenna gain, link budget analysis, fading techniques

UNIT-IV

Overview of FDMA, TDMA and CDMA, overview of ATM, cell str., overview of ISDN, Overview of WLL, Overview of AIN

7. Project(Minor)

Semester 8th

Practical Training for 6 Month

- c. Project
- Seminar