

B.TECH (ECE) +MBA**III SEMESTER**

SUBJECT CODE	NAME OF SUBJECT	TEACHING PERIOD			Credit
		L	T	P	
03BEC101	Mathematics-III	3	1	0	4
03BEC102	Electronic Devices & Circuits	3	0	0	3
03BEC103	Circuit Analysis & Synthesis	3	1	0	4
03BEC104	Electronic Measurements & Instru.	3	0	0	3
03BEC105	Electronic Materials and processes	3	1	0	4
03BEC106	Data Structures & Algorithms	3	0	0	3
03BEC201	Electronics Workshop Lab	0	0	2	1
03BEC202	Computer Programming Lab-I	0	0	3	2
03BEC203	Electronics Lab-I	0	0	3	2
03BEC204	Electronic Measurement & Instru. Lab	0	0	3	2
03BEC301	Discipline & Co- Curricular activities :	0	0	4	1
TOTAL		18	3	15	29

IV SEMESTER

SUBJECT CODE	NAME OF SUBJECT	TEACHING PERIOD			Credits
		L	T	P	
04BEC101	Mathematics-IV	3	1	0	4
04BEC102	Analog Electronics	3	0	0	3
04BEC103	Digital Electronics	3	1	0	4
04BEC104	Electromagnetic Field Theory	3	1	0	4
04BEC105	Random Variables & Stochastic Process	3	1	0	4
04BEC106	Object Oriented Programming	3	0	0	3
04BEC201	Computer Programming Lab-II	0	0	3	2
04BEC202	Electronics Lab-II	0	0	3	2
04BEC203	Digital Electronics Lab	0	0	2	1
04BEC204	Humanities	0	0	2	1
04BEC301	Discipline & Co- Curricular activities :	0	0	4	1
TOTAL		18	4	14	29

V SEMESTER

SUBJECT CODE	NAME OF SUBJECT	TEACHING PERIOD			CREDITS
		L	T	P	
05BEC101	Signals & Systems	3	1	0	4
05BEC102	Linear Integrated Circuits	3	0	0	3
05BEC103	Telecommunication Engg.	3	1	0	4
05BEC104	Analog Communication	3	0	0	3
05BEC105	Microwave Engg. -I	3	1	0	4
05BEC106	Advanced Data Structures	3	0	0	3
05BEC201	Electronic Engineering Design Lab	0	0	2	1
05BEC202	Microwave Engg. Lab	0	0	3	2
05BEC203	Communication Lab-I	0	0	3	2
05BEC204	Signal Processing Lab-I	0	0	3	2
05BEC301	Discipline & Co- Curricular activities :	0	0	4	1
TOTAL		18	3	15	29

VI SEMESTER

SUBJECT CODE	NAME OF SUBJECT	TEACHING PERIOD			CREDITS
		L	T	P	
06BEC101	Microwave Engg.-II	3	1	0	4
06BEC102	Microprocessor and Microcontroller	3	0	0	3
06BEC103	Industrial Electronics	3	1	0	4
06BEC104	Digital Communication	3	0	0	3
06BEC105	Control Systems	3	1	0	4
06BEC106	Optimization Techniques	3	0	0	3
06BEC201	Communication Lab-II	0	0	2	1
06BEC202	Microprocessor Lab	0	0	3	2
06BEC203	Unix Shell Programming Lab	0	0	3	2
06BEC204	Industrial Electronics Lab	0	0	3	2
06BEC301	Discipline & Co- Curricular activities :	0	0	4	1
TOTAL		18	3	15	29

VII SEMESTER

SUBJECT CODE	NAME OF SUBJECT	TEACHING PERIOD			CREDITS
		L	T	P	
07BEC101	Antenna & Wave Propagation	3	0	0	3
07BEC102	Digital Signal Processing	3	0	0	3
07BEC103	Wireless Communication	3	0	0	3
07BEC104	IC Technology	3	0	0	3
07BEC105	VLSI Design	3	0	0	3
07BEC106	Operating System	3	0	0	3
07BMD101	Principles and Practice of Management	3	0	0	3
07BMD102	Managerial Economics	3	0	0	3
07BMD103	International Business Management	3	0	0	3
07BEC201	Signal Processing Lab-II	0	0	2	1
07BEC202	Wireless Communication Lab	0	0	2	1
07BEC203	Training Seminar& Industrial Visit	0	0	2	1
07BEC204	Project (Stage I)	0	0	2	1
07BEC301	Discipline & Co- Curricular activities :	0	0	1	1
TOTAL		27	0	9	32

VIII SEMESTER

SUBJECT CODE	NAME OF SUBJECT	TEACHING PERIOD			CREDITS
		L	T	P	
08BEC101	Computer Networks	3	0	0	3
08BEC102	Radar & TV Engineering	3	0	0	3
08BEC103	Optical Communication	3	0	0	3
08BEC104.1 08BEC104.2 08BEC104.3	ELECTIVE SUBJECT (ANY ONE) IMAGE PROCESSING AND PATTERN RECOGNITION VHDL MICROCONTROLLER AND EMBEDDED SYSTEMS	3	0	0	3
08BMD101	Human Resource Management	3	0	0	3
08BMD102	Marketing Management	3	0	0	3
08BMD103	Financial Management	3	0	0	3
08BMD104	Management Information system	3	0	0	3
08BEC201	Computer Network Programming Lab	0	0	2	1
08BEC202	Industrial Economics & Management	0	0	2	1
08BEC203	VLSI & Optical Fiber Lab	0	0	3	2
08BEC204	Project(Stage-II)	0	0	3	2
08BEC205	Seminar	0	0	2	1
08BEC301	Discipline & Co- Curricular activities :	0	0	0	1

TOTAL	24	0	12	32
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SEMESTER IX

Subject Code		Name of Subject	Teaching Period			Credits
			L	T	P	
Compulsory Papers						
09BMD101		Business Policy & strategic Management	3	0	0	3
09BMD102		Operation & Product Management	3	0	0	3
09BMD103		Research Methods in Management	3	0	0	3
09BMD104		Summer Training & Project Management	3	0	0	3
Optional Papers (Major)-V						
(Finance)	09BMD105	International Financial Management	4	1	0	4
(Marketing)	09BMD106	International Marketing	4	1	0	5
(Human Resource)	09BMD107	Strategic Human Resource Management	4	1	0	5
Optional Papers (Major)-VI						
(Finance)	09BMD108	Investment Management & Security Analysis	4	1	0	5
Marketing)	09BMD109	Advertisement Management	4	1	0	5
Human Resource)	09BMD110	Training & development	4	1	0	5
Optional Paper (Minor) VII 1st paper of other two group (Not of Major Group selected)			4	0	0	5
09BCS301		Discipline & Extra Curricular Activities	0	0	0	1
			27	0	0	27

NOTE:-

- In IX Semester student has to study all compulsory paper, two major optional paper & one minor paper)
- Optional minor papers (Marketing/H.R./ Finance) will be 1st paper of other two group. (Not of Major Group selected)
- Major paper could be obtain from any group (i.e. a group A/B/C)
- A student has to select minor paper from the group A/B/C for the respective semester.

Semester X

Subject Code	Name of Subject	Teaching Period			Credits
		L	T	P	
Compulsory Paper					
10 BMD101	Social Responsibility & Business Ethics & Law	4	0	0	4
10 BMD102	Project Management	4	0	0	4
Major Optional Paper III					
10 BMD103(Finance)	Management of Financial Services	4	1	0	5
10 BMD104(Marketing)	Sales & Distribution Management				
10 BMD105(Human Resource)	Leadership Skill & Change Management				
Major Optional Paper IV					
10 BMD106(Finance)	Finance For Strategic Decisions	4	1	0	5
10 BMD107(Marketing)	Product & Brand Management				
10 BMD108(Human Resource)	Human Resource Planning				
Major Optional Paper V					
10 BMD109(Finance)	Banking Services & Operation	4	1	0	5
10 BMD110(Marketing)	Marketing of Services				
10 BMD111(Human Resource)	Performance Management & Retention Strategies				
Optional Minor Paper 1st paper of other two group (Not of Major Group selected)		4	1	0	5
10BMD301	Discipline & Extra Curricular Activities	0	0	2	1
Total		24	4	2	29

Note

- In X semester student has to study two compulsory papers, three major optional papers, and one minor paper.
- Optional Minor paper (Marketing/H.R./Finance) will be 1st paper of other two group (Not of Major Group selected)

III SEMESTER

MATHEMATICS-III

Course/Paper: 03BEC-101
BEC Semester-III

UNIT 1 : LAPLACE TRANSFORM - Laplace transform with its simple properties, applications to the solution of ordinary and partial differential equations having constant co-efficients with special reference to the wave and diffusion equations.

UNIT 2 : FOURIER SERIES & Z TRANSFORM – Expansion of simple functions in fourier series. Half range series, Change of intervals, Harmonic analysis,Z TRANSFORM - Introduction, Properties, Inverse Z Transform .

UNIT3 : FOURIER TRANSFORM - Complex form of Fourier Transform and its inverse, Fourier sine and cosine transform and their inversion. Applications of Fourier Transform to solution of partial differential equations having constant co-efficient with special reference to heat equation and wave equation.

UNIT 4 : COMPLEX VARIABLES - Analytic functions, Cauchy-Riemann equations, Elementary conformal mapping with simple applications, Line integral in complex domain, Cauchy's theorem. Cauchy's integral formula.

UNIT 5 : COMPLEX VARIABLES -Taylor's series Laurent's series poles, Residues, Evaluation of simple definite real integrals using the theorem of residues. Simple contour integration.

Reference

1. B.S.Grewal- higher engineering mathematics : Khanna Pub.
2. Chandrika Prasad- Mathematics for engineers
3. Johnson- probability and statistics for engineers, pearson education.
4. gaur and Kaul- engineering mathematics, Vol I & II;JPH

ELECTRONIC DEVICES & CIRCUITS

Course/Paper: 03BEC-102
BEC Semester-III

UNIT 1 : SEMICONDUCTOR PHYSICS : Mobility and conductivity, charge densities in a semiconductor, Fermi Dirac distribution, carrier concentrations and fermi levels in semiconductor, Generation and recombination of charges, diffusion and continuity equation, Mass action Law, Hall effect.

UNIT 2 : Junction diodes, Diode as a ckt. element, load line concept, clipping and clamping circuits, Voltage multipliers. Construction, characteristics and working principles of UJT

UNIT 3 : Transistor characteristics, Current components, Current gains: alpha and beta. Operating point. Hybrid model, h-parameter equivalent circuits. CE, CB and CC configuration. DC and AC analysis of CE,CC and CB amplifiers. Ebers-Moll model. Biasing & stabilization techniques. Thermal runaway, Thermal stability.

UNIT 4 : JFET, MOSFET, Equivalent circuits and biasing of JFET's & MOSFET's. Low frequency CS and CD JFET amplifiers. FET as a voltage variable resistor.

UNIT 5 : SMALL SIGNAL AMPLIFIERS AT LOW FREQUENCY : Analysis of BJT and FET, DC and RC coupled amplifiers. Frequency response, midband gain, gains at low and high frequency. Analysis of DC

and differential amplifiers, Miller's Theorem. Cascading Transistor amplifiers, Darlington pair. Emitter follower, source follower.

Reference

1. J.Milliman & C.C. Halkias – Integrated Electronics: TMH
2. Robert Boylestand & L.Nashelsky Electronic devices & circui theory
3. Sedra Smith- Microelectronic Circuits, Oxford Press, India.
4. Rajeev tiwari – “electronic devices & circuits”, genius publication.
5. H.P.Tiwari “electronic devices & cuircuit”, Ashirwad pub.
6. J.B.Gupta “Electronic Devices & Communication”, Katson

CIRCUIT ANALYSIS & SYNTHESIS

Course/Paper: 03BEC-103
BEC Semester-III

UNIT 1 : NETWORK THEOREMS AND ELEMENTS :Thevenin's, Norton's, Reciprocity, Superposition, Compensation, Miller's, Tellegen's and maximum power transfer theorems. Networks with dependent sources. Inductively coupled circuits – mutual inductance, coefficient of coupling and mutual inductance between portions of same circuits and between parallel branches. Transformer equivalent, inductively and conductively coupled circuits.

UNIT 2 :TRANSIENTS ANALYSIS : Impulse, step, ramp and sinusoidal response Analysis of first order and second order circuits. Time domain & transform domain (frequency, Laplace) analysis. Initial and final value theorems. Complex periodic waves and their analysis by Fourier analysis. Different kind of symmetry. Power in a circuit.

UNIT 3 : NETWORK FUNCTIONS : Terminals and terminal pairs, driving point impedance transfer functions, poles and zeros. Procedure of finding network functions for general two terminal pair networks. Stability & causality. Hurwitz polynomial, positive real function.

UNIT 4 : TWO PORT NETWORKS : Two port parameters and their interrelations – z-parameters, yparameters, h-parameters, ABCD parameters. Equivalence of two ports, transformer equivalent, interconnection of two port networks. Image parameters. Attenuation & phase shift in symmetrical T and δ networks.

UNIT 5 : NETWORK SYNTHESIS : RL & RC networks synthesis, Foster First & Second form, Cauer forms.

Reference

1. Kuo, Franklin F – Network Analysis and synthesis, II Ed, 1999, John Willy & Sons
2. Desoer, C. and Duh, E.S- E.S. Basic Circuit theory, Mc Graw Hill.
3. Schoum's Outline series on circuit analysis.
4. Chakraborti “circuit theory”, dhanpat rai pub.
5. K.M. Soni – circuit theory “ S.K. Kataria & Sons”

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

Course/Paper: 03BEC-104
BEC Semester-III

UNIT 1: ELECTRONIC INSTRUMENTS FOR MEASURING BASIC PARAMETERS: -

Voltage Measurement – Integrating type Voltmeter (Voltage to frequency Converter), Successive Approximation Type Voltmeter, Ramp type Digital Voltmeter, Digital Multimeter, Q Meter , Digital Frequency Meter.

UNIT 2: OSCILLOSCOPES:-Multi input Oscilloscopes. Dual Trace Oscilloscopes, Dual Beam Oscilloscopes, Sampling Oscilloscopes. Analog – Storage Oscilloscope. Principle of Secondary

emissions. Digital Storage Oscilloscope – Principle of operation. Waveform reconstruction, Comparison between analog & digital storage Oscilloscope.

UNIT 3: A.C. BRIDGES: -Generalized treatment of four arm, A.C. Bridges, Sources & Detectors, Measurement of self inductances with the help of Maxwell's Bridges, Hay's Bridge, Anderson's Bridges De-sauty Bridge for Capacitance Measurement, Wein's Bridge for Capacitance and frequency measurement. Measurement of Earth Resistance.

UNIT 4: SIGNAL GENERATION:-Signal Analysis - Measurement Technique, Wave Analyzers, Frequency - selective wave analyzer, Heterodyne wave analyzer, Harmonic distortion analyzer, Spectrum analyzer.

UNIT 5: PROCESS CONTROL: -Diaphragms, Seismic Accelerometers, Ultrasonic Flow meters, Principle of Optical fibers, Acceptance angle & numerical aperture, Photoelectric Tachometer, Variable reluctance tachometer, stroboscope. Introduction to Programmable logic control

Reference

1. H.S.Kalsi – “Electronic Tns. & Measurement” TMH
2. W.D.Cooper – “Electronic Tns. & Measurement technique”, PHI
3. A.K. Sawhney- “Electrical & Electronic Measurement & ins.” Dhanpat Ray Pub.
4. J.B.Gupta “electronic measurement & instrumentation”, katson pub.

ELECTRONIC MATERIALS & PROCESSES

Course/Paper: 03BEC-105
BEC Semester-III

UNIT 1 : DIELECTRIC MATERIALS : Polarisation phenomenon, spontaneous polarisation, dielectric constant and loss, piezo and ferro electricity.

UNIT 2 : MAGNETIC MATERIALS: Dia, para, ferro-ferrimagnetism; soft and hard magnetic materials and their applications.

UNIT 3 : SEMI CONDUCTOR MATERIALS : Crystal growth, zone refining, Degenerate and nondegenerate semiconductors, Direct and indirect band gap semiconductors. Electronic properties of silicon, Germanium, Compound Semiconductor, Gallium Arsenide, gallium phosphide & Silicon carbide.

UNIT 4: CONDUCTIVE & SUPERCONDUCTIVE MATERIALS : Electrical properties of conductive and resistive materials. Important characteristics and electronic applications of specific conductor & resistance materials. Superconductor phenomenon, Type I and Type II superconductors and their applications.

UNIT 5: PASSIVE COMPONENTS & PCB FABRICATION: Brief study of fabrication methods of fixed and variable type of resistors; capacitors, Inductors, solenoid and toroid, air core, iron core and Ferro core conductors. Printed Circuit Boards – Types, Manufacturing of copper clad laminates, PCB Manufacturing process, Manufacturing of single and double sided PCBs. Surface mount devices –advantages & limitations.

Reference

1. S.O.Kasap – Principal Of electrical engineering material and process, Mc Graw Hill
2. B.D.Indu – Electrical Engineering Materials. Jain Brothers
3. S.P.Seth and P.V.Gupta – A course of electrical engineering materials, Dhanpat Rai Pub.
4. preeti maheshwari – electronic material & process, New Age Pub.

DATA STRUCTURES & ALGORITHMS

Course/Paper: 03BEC-106
BEC Semester-III

UNIT 1 : PERFORMANCE MEASUREMENT : Space complexity and Time complexity, big oh, omega and theta notations and their significance. Linear Lists - Array and linked representation, Singly & Doubly linked lists. Concept of circular linked lists.

UNIT 2 : ARRAY & MATRICES - Row and Column Major mapping & representation, irregular 2D array, Matrix operations, Special matrices: diagonal, tri-diagonal, triangular, symmetric. Sparse matrices representation and its transpose.

UNIT 3 : STACKS - Representation in array & linked lists, basic operation, Applications of stacks in parenthesis matching, towers of Hanoi etc. Queues - Representation in array & linked lists, applications, circular queues.

UNIT 4 : TREES - Binary Tree, representation in array & linked lists, basic operation on binary trees, binary tree traversal (preorder, post order, in order).

Search Trees - Binary search tree, indexed-binary search tree, basic operation, AVL tree, B-tree.

UNIT 5 : GRAPHS - Representation of un weighted graphs, BFS, DFS, Minimum cost spanning trees, Single source shortest path. Sorting - Bubble sort, insertion sort, merge sort, selection sort, quick sort, heap sort.

Reference

1. Harowitz & Sawhni : Data Structure in pascal (BPB Pub.)
2. Langran , Augenstein & Tenenbaum data structure using C & C++, PHI,
3. Kruse, Leung & Tondo : data structure & Program Design in C, Pearson Education.
4. Prkati trivedi "Data Structure Algorithm",

ELECTRONICS WORKSHOP- LAB

Course/Paper: 03BEC-201
BEC Semester-III

1. Identification, Study & Testing of various electronic components :
(a) Resistances-Variety types, Colour coding (b) Capacitors-Variety types, Coding, (c) Inductors
(d) Diodes (e) Transistors (f) SCRs (g) ICs (h) Photo diode (i) Photo transistor (j) LED (k) LDR
(l) Potentiometers
2. Study of symbols for various Electrical & Electronic Components, Devices, Circuit functions etc.
3. To study and perform experiment on CRO demonstration kit.
4. Soldering & desoldering practice.
5. (a) To Design & fabricate a PCB for a Regulated power supply.
(b) Assemble the Regulated power supply using PCB and test it.
6. To study and plot the characteristics of following Opto-Electronic devices –
(a) LED (b) LDR (c) Photovoltaic cell (d) Opto-coupler
(e) Photo diode (f) Photo transistor (g) Solar cell
7. To study the specifications and working of a Transistor radio kit and perform measurements on it.
8. To study the specifications and working of a Tape Recorder kit.
9. To prepare design layout of PCBs using software tools.
10. To fabricate PCB and testing of electronics circuit on PCB.
11. To design and test regulated power supply using ICs

12. To study the specifications and working of a VCD Player.
13. To study the specifications and working of color TV.

COMPUTER PROGRAMMING LAB-I

Course/Paper: 03BEC-202
BEC Semester-III

Program in C

1. Simple array and sorting algorithm implementations.
2. Addition, multiplication and transpose of sparse matrices represented in array form.
3. Polynomial addition, multiplication (8th degree polynomials), using array & linked lists.
4. Implementation of stack and queue using array & linked lists.
5. Implementation of circular queue using array.
6. Infix to postfix/prefix conversion.
7. Binary search tree creation and traversing.
8. Generation of spanning trees for a given graph using BFS & DFS algorithms.
9. AVL tree implementation (creation, insertion, deletion).
10. Symbol table organization (Hash Table).

ELECTRONICS LAB I

Course/Paper: 03BEC-203
BEC Semester-III

1. Study the following devices:
 - (a) Analog & digital multimeters
 - (b) Function/ Signal generators
 - (c) Regulated d. c. power supplies (constant voltage and constant current operations)
 - (d) Study of analog CRO, measurement of time period, amplitude, frequency & phase angle using Lissajous figures.
- 2 Plot V-I characteristic of P-N junction diode & calculate cut-in voltage, reverse Saturation current and static & dynamic resistances.
- 3 Plot V-I characteristic of zener diode and study of zener diode as voltage regulator. Observe the effect of load changes and determine load limits of the voltage regulator.
- 4 Plot frequency response curve for single stage amplifier and to determine gain bandwidth product.
- 5 Plot drain current - drain voltage and drain current – gate bias characteristics of field effect transistor and measure of I_{dss} & V_p
- 6 Application of Diode as clipper & clamper
- 7 Plot gain- frequency characteristic of two stage RC coupled amplifier & calculate its bandwidth and compare it with theoretical value.
- 8 Plot gain- frequency characteristic of emitter follower & find out its input and output resistances.
- 9 Plot input and output characteristics of BJT in CB, CC and CE configurations. Find their hparameters.
- 10 Study half wave rectifier and effect of filters on wave. Also calculate theoretical & practical ripple factor.
- 11 Study bridge rectifier and measure the effect of filter network on D.C. voltage output & ripple factor.

ELECTRONIC MEASUREMENT & INSTRUMENTATION LAB

Course/Paper: 03BEC-204
BEC Semester-III

1. Measure earth resistance using fall of potential method.
2. Plot V-I characteristics & measure open circuit voltage & short circuit current of a solar panel.
3. Measure unknown inductance capacitance resistance using following bridges
(a) Anderson Bridge (b) Maxwell Bridge
4. To measure unknown frequency & capacitance using Wein's bridge.
5. Measurement of the distance with the help of ultrasonic transmitter & receiver.
6. Measurement of displacement with the help of LVDT.
7. Draw the characteristics of the following temperature transducers:
(a) RTD (Pt-100) (b) Thermistors (c) Thermocouple
8. Draw the characteristics between temperature & voltage of a K type thermocouple.
9. Measure the speed of a Table Fan using stroboscope.
10. Measurement of strain/ force with the help of strain gauge load cell.
11. Study the working of Q-meter and measure Q of coils.
12. To study the working of Spectrum analyzer and determine the bandwidth of different signals.

IV SEMESTER

MATHEMATICS-IV

Course/Paper: 04BEC-101
BEC Semester-IV

UNIT 1 : NUMERICAL ANALYSIS - Finite differences – Forward, Backward and Central differences. Newton's forward and backward differences, interpolation formulae. Stirling's formula, Lagrange's interpolation formula.

UNIT 2 : NUMERICAL ANALYSIS- Integration-Trapezoidal rule, Simpson's one third and three-eighth rules. Numerical solution of ordinary differential equations of first order - Picard's method, Euler's and modified Euler's methods, Miline's method and Runge-Kutta fourth order method., Differentiation

UNIT 3 : SPECIAL FUNCTIONS – Bessel's functions of first and second kind, simple recurrence relations, orthogonal property of Bessel's , Transformation, Generating functions, Legendre's function of first kind. Simple recurrence relations, Orthogonal property, Generating function.

UNIT 4 : STATISTICS AND PROBABILITY - Elementary theory of probability, Baye's theorem with simple applications, Expected value, theoretical probability distributions-Binomial, Poisson and Normal distributions. Lines of regression, co-relation and rank correlation.

UNIT 5 : CALCULUS OF VARIATIONS - Functional, strong and weak variations simple variation problems, the Euler's equation.

Reference

1. B.S.Grewal- higher engineering mathematics : Khanna Pub.
2. Chandrika Prasad- Mathematics for engineers
3. Johnson- probability and statistics for engineers, pearson education.
4. gaur and Kaul- engineering mathematics, Vol I & II;JPH

ANALOG ELECTRONICS

Course/Paper: 04BEC-102
BEC Semester-IV

.UNIT 1 : FEEDBACK AMPLIFIERS : Classification, Feedback concept, Transfer gain with feedback, General characteristics of negative feedback amplifiers. Analysis of voltage-series, voltage-shunt, current-series and current-shunt feedback amplifier. Stability criterion.

UNIT 2 : OSCILLATORS : Classification. Criterion for oscillation. Tuned collector, Hartley, Colpitts, RC Phase shift, Wien bridge and crystal oscillators, Astable, monostable and bistable multivibrators. Schmitt trigger. Blocking oscillators.

UNIT 3 : HIGH FREQUENCY AMPLIFIERS : Hybrid Pi model, conductances and capacitances of hybrid Pi model, high frequency analysis of CE amplifier, gain-bandwidth product. Emitter follower at high frequencies.

UNIT 4 : TUNED AMPLIFIER - Band Pass Amplifier, Parallel resonant Circuits, Band Width of Parallel resonant circuit. Analysis of Single Tuned Amplifier, Primary & Secondary Tuned Amplifier with BJT & FET. Double Tuned Transformer Coupled Amplifier. Stagger Tuned Amplifier. Pulse Response of such Amplifier. Shunt Peaked Circuits for Increased Bandwidth.

UNIT 5 : POWER AMPLIFIERS : Power amplifier circuits, Class A output stage, class B output stage and class AB output stages, class C amplifiers, pushpull amplifiers with and without transformers. Complementary symmetry & quasi complimentary symmetry amplifiers

Reference

1. J.Milliman & C.C. Halkias – Integrated Electronics: TMH
2. Robert Boylestand & L.Nashelsky Electronic devices & circui theory
3. Sedra Smith- Microelectronic Circuits, Oxford Press, India.
4. Rajeev tiwari “Analog Electronics”, Genius pub.
5. J.B.Gupta “Electronic Devices & circuits” Katson pub.

DIGITAL ELECTRONICS

Course/Paper: 04BEC-103

BEC Semester-IV

UNIT 1 : NUMBER SYSTEMS, BASIC LOGIC GATES & BOOLEAN ALGEBRA: Binary Arithmetic & Radix representation of different numbers. Sign & magnitude representation, Fixed point representation, complement notation, various codes & arithmetic in different codes & their inter conversion. Features of logic algebra, postulates of Boolean algebra. Theorems of Boolean algebra. Boolean function. Derived logic gates: Exclusive-OR, NAND, NOR gates, their block diagrams and truth tables. Logic diagrams from Boolean expressions and vica-versa. Converting logic diagrams to universal logic. Positive, negative and mixed logic. Logic gate conversion.

UNIT 2 : DIGITAL LOGIC GATE CHARACTERISTICS: TTL logic gate characteristics. Theory & operation of TTL NAND gate circuitry. Open collector TTL. Three state output logic. TTL subfamilies. MOS & CMOS logic families. Realization of logic gates in RTL, DTL, ECL, C-MOS & MOSFET. Interfacing logic families to one another.

UNIT 3 : MINIMIZATION TECHNIQUES: Minterm, Maxterm, Karnaugh Map, K map upto 4 variables. Simplification of logic functions with K-map, conversion of truth tables in POS and SOP form. Incomplete specified functions. Variable mapping. Quinn-Mc Klusky minimization techniques.

UNIT 4 : COMBINATIONAL SYSTEMS: Combinational logic circuit design, half and full adder, subtractor. Binary serial and parallel adders. BCD adder. Binary multiplier. Decoder: Binary to Gray decoder, BCD to decimal, BCD to 7-segment decoder. Multiplexer, demultiplexer, encoder. Octal to binary, BCD to excess-3 encoder. Diode switching matrix. Design of logic circuits by multiplexers, encoders, decoders and demultiplexers.

UNIT 5 : SEQUENTIAL SYSTEMS: Latches, flip-flops, R-S, D, J-K, Master Slave flip flops. Conversions of flip-flops. Counters : Asynchronous (ripple), synchronous and synchronous decade counter, Modulus counter, skipping state counter, counter design. Ring counter. Counter applications. Registers: buffer register, shift register.

Reference

1. Morris Mano – Digital Circuits & Logic Design; PHI
2. Gree- Dgital Electronics, pearson education

3. Brtee- digital computer fundamental, TMH
4. Mano – Digital Design, pearson education.
5. shahlivahnan “digital electronics”, vikahs pub.

ELECTROMAGNETIC FIELD THEORY

Course/Paper: 04BEC-104

BEC Semester-IV

UNIT 1 : INTRODUCTION : Vector Relation in rectangular, cylindrical, spherical and general curvilinear coordinate system. Concept and physical interpretation of gradient, Divergence and curl, Green’s & Stoke’s theorems.

UNIT 2 : ELECTROSTATICS : Electric field intensity & flux density. Electric field due to various charge configurations. The potential functions and displacement vector. Gauss’s law. Poisson’s and Laplace’s equation and their solution. Uniqueness theorem. Continuity equation. Capacitance and electrostatics energy. Field determination by method of images. Boundary conditions. Field mapping and concept of field cells.

UNIT 3 : MAGNETOSTATICS : Magnetic field intensity, flux density & magnetization, Faraday’s Law, Bio-Savart’s law, Ampere’s law, Magnetic scalar and vector potential, self & mutual inductance, Energy stored in magnetic field, Boundary conditions, Analogy between electric and magnetic field, Field mapping and concept of field cells.

UNIT 4 : TIME VARYING FIELDS : Displacement currents and equation of continuity. Maxwell’s equations, Uniform plane wave in free space, dielectrics and conductors, skin effect sinusoidal time variations, reflection & refraction of Uniform Plane Wave, standing wave ratio. Pointing vector and power considerations.

UNIT 5: RADIATION, EMI AND EMC : Retarded Potentials and concepts of radiation, Radiation from a small current element. Radiation resistance: Introduction to Electromagnetic Interference and Electromagnetic compatibility, EMI coupling modes, Methods of eliminating interference, shielding, grounding, conducted EMI, EMI testing: emission testing, susceptibility testing.

Reference

1. W.H.Hayt Jr. – Engineering electro magnetics, TMH
2. Cheng –field and wave electromagnetic, pearson education
3. Griffiths – introduction to electromagnetic “2/E PHI” .
4. S.P.Seth “electromagnetic field theory”.
5. Sadiku “Electromagnetic field theory”
6. Sediken ioxted –
7. H.P. Tiwari “electromagnetic field theory”, Ashrwad pub.

RANDOM VARIABLES & STOCHASTIC PROCESSES

Course/Paper: 04BEC-105

BEC Semester-IV

UNIT 1 : PROBABILITY :Definitions, sample, space & events, joint & conditional probability, dependent events.

UNIT 2 : RANDOM VARIABLES : Introduction, distribution & density functions, discrete & continuous random variables, special distributions : binominal, poisson, uniform, exponential, normal, rayleigh. conditional distribution & density functions.

UNIT 3 : MULTIPLE RANDOM VARIABLES :

Vector random variable, joint distribution functions, joint probability density function, conditional distribution & density functions. Statistical independence, distribution & density function of sum of

random variable, one function of one random variable ,one function of two random variable, two function of two random variable.

UNIT 4 : OPERATION ON SINGLE & MULTIPLE RANDOM VARIABLES :

Mean & variance, moments, chebyshev's inequality, Central limit theorem, characteristic functions & moment generating function, covariance & correlation coefficient of multiple random variable.

UNIT 5: STOCHASTIC PROCESSES :

Introduction, random process concept, stationary & independence, ergodicity, correlation, functions
Gaussian Random Process, Transmission of Random process through linear systems. Power spectral
Density, Cross Spectral density,

Reference

1. Populis – “random variable & stochastic process” TMH.
2. Schoum's Outline – “RVSP”
3. Schoum's “analog and Digital Communication”.
4. “Random Variable & stochastic processes”, CBC Pub.

OBJECT ORIENTED PROGRAMMING

Course/Paper: 04BEC-106

BEC Semester-IV

UNIT 1 : OOP FUNDAMENTALS: Concept of class and object, attributes, public, private and protected members, derived classes, single & multiple inheritance,

UNIT 2 : PROGRAMMING IN C++: Enhancements in C++ over C, Data types, operators and functions. Inline functions, constructors and destructors. Friend function, function and operator overloading. Working with class and derived classes. Single, multiple and multilevel inheritances and their combinations, virtual functions, pointers to objects. Input output flags and formatting operations. Working with text files.

UNIT 3 : JAVA: Variation from C++ to JAVA. Introduction to Java byte code, virtual machine, application & applets of Java, integer, floating point, characters, Boolean, literals, and array declarations

UNIT 4 : OPERATORS AND CONTROL STATEMENTS: Arithmetic operators, bit wise operators, relational operators, Boolean logic operators, the assignment operators, ?: operators, operator precedence. Switch and loop statements.

UNIT 5: PACKAGE AND INTERFACES: Packages, access protection, importing & defining packages. Defining and implementing interfaces.

Reference

1. folk – file structure: an object oriented approach to C++, pearson education
2. balaguruswamy– object oriented programming in C++, TMH
3. Kelley : A book on C, Pearson Education.
4. sunil K Panday “Thinking in C++” Katson Pub.

COMPUTER PROGRAMMING LAB-II

Course/Paper: 04BEC-201

BEC Semester-IV

Programs in C++

1. Write a program to perform the complex arithmetic.
2. Write a program to perform the rational number arithmetic.
3. Write a program to perform the matrix operations. (Transpose, addition, subtraction, multiplication, test if a matrix is symmetric/ lower triangular/ upper triangular)
4. Implement Morse code to text conversion and vice-versa.
5. To calculate Greatest Common Divisor of given numbers.
6. To implement tower of Hanoi problem.

Program in Java

7. To implement spell checker using dictionary.
8. To implement a color selector from a given set of colors.
9. To implement a shape selector from a given set of shapes.
10. By mapping keys to pens of different colors, implement turtle graphics.
11. To implement a calculator with its functionality.
12. To implement a graph and display BFS/DFS order of nodes.

ELECTRONICS LAB II

Course/Paper: 04BEC-202
BEC Semester-IV

1. Plot gain-frequency characteristics of BJT amplifier with and without negative feedback in the emitter circuit and determine bandwidths, gain bandwidth products and gains at 1kHz with and without negative feedback.
2. Study of series and shunt voltage regulators and measurement of line and load regulation and ripple factor.
3. Plot and study the characteristics of small signal amplifier using FET.
4. Study of push pull amplifier. Measure variation of output power & distortion with load.
5. Study Wein bridge oscillator and observe the effect of variation in R & C on oscillator frequency
6. Study transistor phase shift oscillator and observe the effect of variation in R & C on oscillator frequency and compare with theoretical value.
7. Study the following oscillators and observe the effect of variation of C on oscillator frequency: (a) Hartley (b) Colpitts
8. Design Fabrication and Testing of k-derived filters (LP/HP).
9. Study of a Digital Storage CRO and store a transient on it.
10. To plot the characteristics of UJT and UJT as relaxation.
11. To plot the characteristics of MOSFET and CMOS.

DIGITAL ELECTORNICS LAB

Course/Paper: 04BEC-203
BEC Semester-IV

1. To study and perform the following experiments.
 - (a) Operation of digital multiplexer and demultiplexer.
 - (b) Binary to decimal encoder.
 - (c) Characteristics of CMOS integrated circuits.
2. To study and perform experiment- Compound logic functions and various combinational circuits based on AND/NAND and OR/NOR Logic blocks.
3. To study and perform experiment -Digital to analog and analog to digital converters.
4. To study and perform experiment- Various types of counters and shift registers.
5. To study and perform experiment - Interfacing of CMOS to TTL and TTL to CMOS ICs.
6. To study and perform experiment- BCD to binary conversion on digital IC trainer.
7. To study and perform experiment -
 - (a) Astable (b) Monostable (c) Bistable Multivibrators and the frequency variation with different parameters, observe voltage waveforms at different points of transistor.

8. To study and perform experiment -Voltage comparator circuit using IC-710.
9. To study and perform experiment- Schmitt transistor binary circuit.
10. Design 2 bit binary up/down binary counter on bread board.

HUMANITIES

Course/Paper: 04BEC-204
BEC Semester-IV

UNIT 1 : INDIA- Brief History of Indian Constitution- framing, features, fundamental rights, duties, directive principles of state. History of Indian national movement, Socio economic growth after independence.

UNIT 2 : SOCIETY – Social Groups- Concepts and types, socialization- concept and theory, social control; concept, social problem in contemporary India, status and role.

UNIT 3 : THE FUNDAMENTALS OF ECONOMICS – Meaning, definition and importance of economics, Logic of choice, Central Economic Problems, Positive and Normative approaches, economic systems socialism and capitalism.

UNIT 4 : MICROECONOMICS –Law of demand and supply, Utility approach, Indifference curves, Elasticity of demand & supply and applications, Consumer surplus, Law of returns to factors and returns to scale.

UNIT 5: MACRO ECONOMICS –Concept relating to national product-National income and its measurement, Simple Keynesian theory, Simple multiplier, Money and banking,- Meaning, Concept of international trade, Determination of exchange rate, Balance of payments. Characteristics of Indian Economy.

V SEMESTER

SIGNALS & SYSTEMS

Course/Paper: 05BEC-101
BEC Semester-V

UNIT 1: INTRODUCTION : Continuous time and discrete time systems, Properties of systems. Linear time invariant systems - continuous time and discrete time. Properties of LTI systems and their block diagrams. Convolution, Discrete time systems described by difference equations.

UNIT 2 : FOURIER SERIES REPRESENTATION OF SIGNALS : Fourier series representation of continuous periodic signal & its properties, Fourier series representation of Discrete periodic signal & its properties, Continuous time filters & Discrete time filters described by Diff. equation.

UNIT 3 : FOURIER TRANSFORM: The continuous time Fourier transform for periodic and aperiodic signals, Properties of CTFT. Discrete time Fourier transform for periodic and aperiodic signals. Properties of DTFT. The convolution and modulation property.

UNIT 4 : Z-TRANSFORM & LAPLACE TRANSFORM : Introduction. The region of convergence for the Z-transform. The Inverse Z-transform. Two dimensional Z-transform. Properties of Z transform. Laplace transform, Properties of Laplace Transform, Application of Laplace transform to system analysis.

UNIT 5 : SAMPLING : Mathematical theory of sampling. Sampling theorem. Ideal & Real sampling. Interpolation technique for the reconstruction of a signal from its samples. Aliasing. Sampling in freq. domain. Sampling of discrete time signals.

Reference

1. A.V.Oppenheim, A.S. Willsky and I.J Young – “signal & system”, PHI
2. Taub & Schilling – “Principles of communication system”, TMH
3. Prokins & Monalaskys – digital signal processing : Principle Algorithms applications, PHI.
4. sanjay sharma”signal system” Katson pub.
5. fahruk hussain “Signal system”

LINEAR INTEGRATED CIRCUITS

Course/Paper: 05BEC-102
BEC Semester-V

UNIT 1 : OPERATIONAL AMPLIFIERS: Basic differential amplifier analysis, Single ended and double ended configurations, Op-amp configurations with feedback, Op-amp parameters, Inverting and Non-Inverting configuration, Comparators, Adder.

UNIT 2 : OPERATIONAL AMPLIFIER APPLICATIONS:

Integrator, Differentiator, Voltage to frequency & Frequency to voltage converters. Oscillators: Phase shift, Wien bridge, Quadrature, square wave, triangular wave, sawtooth oscillators. Voltage controlled oscillators.

UNIT 3 : ACTIVE FILTERS: Low pass, high pass, band pass and band reject filters, All pass filter, Switched capacitor filter, Butterworth filter design, Chebyshev Filter design.

UNIT 4 : PHASE-LOCKED LOOPS: Operating Principles of PLL, Linear Model of PLL, Lock range, Capture range, Applications of PLL as FM detector, FSK demodulator, AM detector, frequency translator, phase shifter, tracking filter, signal synchronizer and frequency synthesizer, Building blocks of PLL, LM 565 PLL.

UNIT 5 : LINEAR IC's: Four quadrant multiplier & its applications, Basic blocks of linear IC voltage regulators, Three terminal voltage regulators, Positive and negative voltage regulators. The 555 timer as astable and monostable multivibrators. Zero crossing detector, Schmitt trigger.

Reference

1. R.A.Gayakwad – Op- Amplifier & Linear ICs, PHI
2. Taubay – Operational Amplifier
3. K.R.Botker – integrated circuits, pearson education.
4. J.B.Gupta “linear integrated circuit” , Katson pub.
5. sanjay sharma “op-Amp & linear integrated circuit” , Katson pub.

TELECOMMUNICATION ENGINEERING

Course/Paper: 05BEC-103
BEC Semester-V

UNIT 1 : TRANSMISSION LINE: Types of transmission lines, general transmission line equation, line constant, equivalent circuits, infinite line, and reflection on a line, SWR of line with different type of terminations. Distortion less and dissipation less lines, Coaxial cables, Transmission lines at audio and radio frequencies, Losses in transmission line, Characteristics of quarter wave, half wave and lines of other lengths,

UNIT 2 : TRANSMISSION LINE APPLICATIONS: Smith chart and its application. Transmission line applications, Impedance matching Network. Single & double Stub matching. Measurement of parameters of transmission line, measurement of attenuation, insertion loss, reflection coefficient and standing wave ratio.

UNIT 3 : ATTENUATORS & FILTERS: Elements of telephone transmission networks, symmetrical and Asymmetrical two port networks. Different Attenuators, δ -section & T-section attenuators, stub matching, Transmission equalizers Filters, constant K-section, Ladder type, δ -section, T-section filter, m-derived filter sections, Lattices filter section.

UNIT 4 : TELEPHONE TRANSMISSION: Telephone set, Touch tone dial types, two wire/ four wire transmission, Echo suppressors & cancellors, cross talk. Multi-channel systems: Frequency division & time division multiplexing.

UNIT 5: AUTOMATIC TELEPHONY & TELEGRAPHY: Trunking concepts, Grade of service, Traffic definitions, Introduction to switching networks, classification of switching systems. Principle of Electronic Exchange, EPABX and SPC Digital telephone Exchange, Numbering Plan, Facsimile services.

Reference

1. W. Fraser – Telecommunications (BPB Publication)
2. Vishwanathan – Telecommunication switching systems & Networks, PHI
3. Cole – Introduction to Telecommunication, Pearson Education.
4. Umesh Sinha “Telecommunication”, laxmi pub.

ANALOG COMMUNICATION

Course/Paper: 05BEC-104
BEC Semester-V

UNIT 1: NOISE EFFECTS IN COMMUNICATION SYSTEMS: Resistor noise, Networks with reactive elements, Noise temperature, Noise bandwidth, effective input noise temperature, Noise figure. Noise figure & equivalent noise temperature in cascaded circuits.

UNIT 2 : AMPLITUDE MODULATION : Frequency translation, Recovery of base band signal, Spectrum & power relations in AM systems. Methods of generation & demodulation of AM-DSB, AM-DSB/SC and AM-SSB signals. Modulation & detector circuits for AM systems. AM transmitters & receivers.

UNIT 3: FREQUENCY MODULATION : Phase & freq. modulation & their relationship, Spectrum & band width of a sinusoidally modulated FM signal, phasor diagram, Narrow band & wide band FM. Generation & demodulation of FM signals. FM transmitters & receivers.. Comparison of AM, FM & PM. Pre emphasis & deemphasis. Threshold in FM, PLL demodulator.

UNIT 4: NOISE IN AM AND FM: Calculation of signal-to-noise ratio in SSB-SC, DSB-SC, DSB with carrier, Noise calculation of square law demodulator & envelope detector. Calculation of S/N ratio in FM demodulators, Super heterodyne receivers.

UNIT 5: PULSE ANALOG MODULATION : Practical aspects of sampling: Natural and flat top sampling. PAM, PWM, PPM modulation and demodulation methods, PAM-TDM.

Reference

1. Taub & D.L. Schilling – “principles of communication Systems “ TMH.
2. G.Kennedy – “Electronic Communication system”, TMH.
3. B.P.Lathi – “Communication System”, John willy.
4. sanjay sharma “analog communication”, katson pub.

MICROWAVE ENGINEERING-I

Course/Paper: 05BEC-105
BEC Semester-V

UNIT 1 : WAVE GUIDES :Introduction of Microwaves and their applications. Rectangular Waveguides , Solution of Wave equation in TE and TM modes. Power transmission and Power losses. Excitation of modes in Rectangular waveguides, circular waveguides : Basic idea of TE and TM modes, field patterns, TEM mode of propagation.

UNIT 2 : WAVEGUIDE COMPONENTS : Scattering matrix representation of networks. Rectangular cavity and circular cavity resonators. Waveguide Tees, Magic Tees. Hybrid rings. Waveguide corners, Bends and twists. Directional couplers, Circulators and isolators.

UNIT 3 : KLYSTRONS : Limitation of conventional vacuum tubes, Construction and operation of two

cavity & multicavity klystrons. Velocity modulation and electron bunching (analytical treatment), Applegate diagram and applications of two cavity klystrons. Construction, working and operation of Reflex klystron. Applications and practical considerations. Velocity modulation, power output and frequency characteristics of a Reflex klystron. Electron admittance.

UNIT 4 : TRAVELLING WAVE TUBES (TWT): Construction, operation and practical consideration of helix type TWT. Introduction to CW power, pulsed dual mode TWT. Coupled cavity TWT. Applications of TWT.

UNIT 5 : MAGNETRON : Types of Magnetron. Construction, operation, analysis and practical consideration of cavity or travelling wave magnetron. Introduction to coaxial, frequency angle and voltage tunable magnetrons. Backward cross field oscillator, Forward wave cross field amplifier.

Reference

1. S.Y.Lio – “Microwave devices & circuits”, PHI
2. R.E.Collin – “ Foundation for microwave engineering”, Mc Graw Hill
3. Sisodia V.L.Gupta – “Microwave Engineering”, New Age.
4. sachin chauhan “microwave- I”, Genius pub.
5. Kulkarni “microwave & Radar Engg.”, Laxmi pub.

ADVANCED DATA STRUCTURES

Course/Paper: 05BEC-106
BEC Semester-V

UNIT 1 : ADVANCED TREES - Definitions and operations on weight balanced trees (Huffman trees), 2-3 trees and Red-Black trees. Augmenting Red-Black trees to dynamic order statistics and interval tree applications. Operations on disjoint sets and its Union-Find problem. Implementing sets, disctionerics, priority queues and concatenable queues using 2-3 trees.

UNIT 2 : MERGEABLE HEAPS - Mergeable Heap operations, binomial trees, implementing binomial heaps and its operations. 2-3-4- trees and 2-3-4 heaps. Structure and potential function of Fibonacci heap. Implementing Fibonacci Heap.

UNIT 3 : GRAPH THEORY DEFINITIONS - Definitions of Isomorphism, Components, Circuits, Fundamental Circuits, Cut-sets, Cut-Vertices, Planer and dual graphs, Spanning trees, Kuratovski's two graphs.

UNIT 4 : GRAPH THEORETIC ALGORETHMS - Algorithms for connectedness, finding all spanning trees in a weighted graph and planarity testing. Breadth first and depth first search, topological sort, strongly connected components and, articulation point.

UNIT 5 : APPLICATION OF GRAPHS- Single source shortest path and all pair shortest path algorithms. Min-Cut Max-Flow theorem of network flows, Ford-Fulkerson Max Flow algorithms.

Reference

1. Narsing Deo – Graph theory with application to engineering and computer Science, PHI.
2. Horwitz and Sawhni – Fundamental Of Data structure, Galgotia book source.
3. Coremen – Introduction to Algorithm, PHI.
4. Vineet Khanna “advance Data Structure”, Genius Pub.

ELECTRONIC ENGINEERING DESIGN LAB

Course/Paper: 05BEC-201
BEC Semester-V

To design the following circuits, assemble these on bread board and test them.

Simulation of these circuits with the help of appropriate software.

1. Op-Amp characteristics and get data for input bias current, measure the output-offset voltage and reduce it to zero and calculate slew rate.
2. Op-Amp in inverting and non-inverting modes.
3. Op-Amp as scalar, summer and voltage follower.
4. Op-Amp as differentiator and integrator.
5. Design LPF and HPF using Op-Amp 741
6. Design Band Pass and Band reject Active filters using Op-Amp 741.
7. Design Oscillators using Op-Amp (i) RC phase shift (ii) Hartley (iii) Colpitts
8. Design (i) Astable (ii) Monostable multivibrators using IC-555 timer
9. Design Triangular & square wave generator using 555 timer.
10. Design Amplifier (for given gain) using Bipolar Junction Transistor.

MICROWAVE ENGINEERING LAB

Course/Paper: 05BEC-202

BEC Semester-V

1. Study of various microwave components and instruments like frequency meter, attenuator, detector & VSWR meter.
2. Draw V-I characteristics of microwave source like Gunn diode/ Reflex Klystron.
3. Measurement of frequency and wavelength in a rectangular waveguide.
4. Measurement of VSWR (small as well as large values) & reflection coefficient.
5. Measure an unknown impedance with smith chart.
6. Draw the following characteristics of Gunn Diode
 - (i) Output power and frequency as a function of voltage
 - (ii) Square wave modulation by PIN diode.
7. Drawing polar pattern of Horn antenna.
8. To observe the action of directional coupler and its use in separating incident & reflected wave.
9. Study of Magic Tee, Circulator, isolator
10. Study of spectrum analyzer & its use in observing the response of
 - (i) High frequency amplifier
 - (ii) Low pass, high pass, band pass, band reject filters.

COMMUNICATION LAB-I

Course/Paper: 05BEC-203

BEC Semester-V

1. Harmonic analysis of a square wave of a modulated wave form.
2. Observe the Amplitude modulated wave form & measure modulation index. Demodulation of AM signal.
3. Generation & Demodulation of DSB – SC signal.
4. Modulate a sinusoidal signal with high frequency carrier to obtain FM signal. Demodulation of the FM signal.
5. To observe the following in a transmission line demonstrator kit :
 - (a) The propagation of pulse in non reflecting transmission line.
 - (b) The effect of losses in transmission line.
 - (c) Transmission with standing waves on a Transmission line.
 - (d) The resonance characteristics of a half-wave length long X-mission line.
6.
 - (a) To observe the operation of sampling and sample & hold circuits.
 - (b) To study the effect of sampling time (sampling pulse width).
 - (c) To study the effects of changing the sampling frequency & observing aliasing phenomena.
7. To study & observe the operation of a super heterodyne receiver.
8. To study & observe the amplitude response of automatic gain controller (AGC).
- 9, 10. PAM, PWM & PPM: Modulation and demodulation.

SIGNAL PROCESSING LAB-I

Course/Paper: 05BEC-204
BEC Semester-V

Simulation in MATLAB Environment:

1. Generation of continuous and discrete elementary signals (periodic and non-periodic) using mathematical expression.
2. Generation of Continuous and Discrete Unit Step Signal.
3. Generation of Exponential and Ramp signals in Continuous & Discrete domain.
4. Continuous and discrete time Convolution (using basic definition).
5. Adding and subtracting two given signals. (Continuous as well as Discrete signals)
6. To generate uniform random numbers between (0, 1).
7. To generate a random binary wave.
8. To generate random sequences with arbitrary distributions, means and variances for following :
 - (a) Rayleigh distribution
 - (b) Normal distributions: $N(0,1)$.
 - (c) Gaussian distributions: $N(m_x, \sigma_x^2)$
9. To plot the probability density functions. Find mean and variance for the above distributions

VI SEMESTER

MICROWAVE ENGINEERING-II

Course/Paper: 06BEC-101
BEC Semester-VI

UNIT 1 : MICROWAVE MEASUREMENTS : Detection of microwaves, Microwave power measurement, Impedance measurement, Measurement of scattering parameters, Frequency measurement, VSWR measurements.

UNIT 2: Introduction to microstrip lines, Parallel striplines, Coplanar striplines, Shielded striplines, Slot lines, Integrated Fin line, Non-radiative guide, Transitions, Bends and Discontinuities.

UNIT 3 : MICROWAVE NETWORK ANALYSIS: Impedance and Admittance matrices, Scattering matrix, Reciprocal networks and Loss less networks parameters, ABCD Matrix, Equivalent circuits for Two port Network, Conversions between two port network Signal flow graphs, Discontinuities in waveguides and microstrip.

UNIT 4 : MICROWAVE SEMICONDUCTOR DEVICES : Construction, Operation and Practical applications of PIN diode, varactor and Tunnel diode, Gunn diode, IMPATT, TRAPTT diodes, BJT, JFET, MESFET, CCD, MASER and LASER.

UNIT 5 : MONOLITHIC MICOWAVE INTEGRATED CIRCUITS : Introduction, Materials, MMIC Growth, MOSFET fabrication, Thin film formation, Hybrid integrated circuit fabrication, Advantages & Difficulties of MICs.

Reference

- 1.S.Y.Lio – “Microwave devices & circuits”, PHI
- 2.R.E.Collin – “ Founsdation for microwave engineering”, Mc Graw Hill
- 3.K.C. Gupta – “Microwaves”, New Age.
- 4.sachin chauhan- “microwave engg-2” genius pub.
- 5.kulkarni –“microwave engg”- laxmi pub.

MICROPROCESSOR AND MICROCONTROLLER

Course/Paper: 06BEC-102
BEC Semester-VI

UNIT 1 : INTRODUCTION: CPU, address bus, data bus and control bus. Input/ Output devices, buffers, encoders, latches and memories.

UNIT 2 : 8085 MICROPROCESSOR ARCHITECTURE: Internal data operations and registers, pins and signals, peripheral devices and memory organization, interrupts. CISC and RISC architecture overview.

UNIT 3 : 8085 MICROPROCESSOR INSTRUCTIONS: Classification, format and timing. Instruction set. Programming and debugging, 8 bit and 16 bit instructions.

UNIT 4 : 8085 MICROPROCESSOR INTERFACING: 8259, 8257, 8255, 8253, 8155 chips and their applications. A/D conversion, memory, keyboard and display interface (8279).

UNIT 5: INTRODUCTION TO 8051 MICROCONTROLLER: General features & architecture of 8051. Memory, timers and interrupts. Pin details. Interfacing and applications.

Reference

1. R .Goankar-microprocessor architecture,, Programing And Application. Wiley Eastern Ltd.
2. INTEL-Microcontroller handbook.
3. Ayle- 8051 Microcontroller,penram press.
4. rahul srivastav – 8085 microprocessor- neelkant pub.
5. B.Ram “microprocessor & Programming”
6. D.S.Sherawt “Microprocessor”, katson pub.

INDUSTRIAL ELECTRONICS

Course/Paper: 06BEC-103
BEC Semester-VI

UNIT 1: SEMICONDUCTOR POWER DEVICES - Basic characteristics & working of Power Diodes, Diac, SCR, Triac, Power Transistor, MOSFETs, IGBT, and GTO.

UNIT 2: RECTIFIERS & INVERTERS - Working principles of single and three phase bridge rectifiers, Voltage and current source inverters.

UNIT 3: POWER SUPPLIES: Principle of operation of choppers. Step up, Step down and reversible choppers. High frequency electronic ballast, Switch Mode Power Supply: Fly back converter, forward/buck converter, Boost converter and buck-boost converter. Uninterruptible Power Supply.

UNIT 4: MOTOR CONTROL: Introduction to speed control of DC motors using phase controlled converters and choppers, Basic idea of speed control of three phase induction motors using voltage and frequency control methods.

UNIT 5: STEPPER MOTORS: Variable reluctance, Permanent magnet and hybrid stepper motors. Induction and dielectric heating control.

Reference

1. Biswanth paul, Industrial Electronics And Control, Prentice Hall Of India.
2. S.N. biswas, Industrial Electronics.Dhanpat Rai& Co.
3. Morris, Industrial Electronics,Tata Mc-Graw Hill.
- 4.p. s. bhimra – industrial Electronics- laxmi pub.

DIGITAL COMMUNICATION

Course/Paper: 06BEC-104
BEC Semester-VI

UNIT 1 : PCM & DELTA MODULATION SYSTEMS : Uniform and Non-uniform quantization. PCM and delta modulation, Signal to quantization noise ratio in PCM and delta modulation. DPCM, ADM, T1 Carrier System, Matched filter detection. Error probability in PCM system.

UNIT 2 : BASE BAND TRANSMISSION: Line coding(RZ,NRZ): Polar,Bipolar,Manchester,AMI. Inter symbol interference, Pulse shaping, Nyquist criterion, Raised cosine spectrum.

UNIT 2 : DIGITAL MODULATION TECHNIQUES : Geometric interpretation of signals,Orthogonalization. ASK, BPSK, BFSK, QPSK, MSK modulation techniques and Coherent detection of these techniques. Calculation of error probabilities.

UNIT 4 : INFORMATION THEORY : Amount of Information, Average Information, Entropy, Information rate, Increase in Average information per bit by coding, Shannon's Theorem and Shannon's bound, Capacity of a Gaussian Channel, BW-S/N trade off,

UNIT 5: CODING: Coding and decoding of Information, Hamming code, Single Parity-Bit Code, Linear Block code, cyclic code & convolutional code.

Reference

1. Taub & D.L. Schilling – “principles of communication Systems “ TMH.
2. B.P.Lathi – “Communication System”, John willy.
3. Prokasis-“Digital communication” Pearson Education.
4. sanjay sharma-“digital communication” katson pub.
5. chakrobaty –“digital communication” laxmi pub.

CONTROL SYSTEMS

Course/Paper: 06BEC-105
BEC Semester-VI

UNIT 1 : CONTROL SYSTEMS ANALYSIS AND COMPONENTS: Examples and application of open loop and close loop systems. Brief idea of multivariable control system, Brief idea of Z-transform and digital control systems. Differential equations. Determination of transfer function by block diagram reduction technique & signal flow graph method.

UNIT 2 : TIME RESPONSE ANALYSIS OF FIRST ORDER & SECOND ORDER SYSTEMS: Transient response analysis. Steady state error & error constants. Dynamic error and dynamic error coefficient, Performance Indices.

UNIT 3 : FREQUENCY DOMAIN METHODS: Bode plot, Design specification in frequency domain and their co-relation with time domain.

UNIT 4: 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 charts.

UNIT 5 : STATE VARIABLE ANALYSIS: Concepts of state, state variable and state model. State models for linear continuous time systems. Brief idea of state variable analysis in discrete time domain. Transfer functions, Solution of state equation. Concepts of controllability & observability.

Reference

1. I.J. Nagrath and M gopal: control system Engineering, New Age.
2. M Gopal:. Control system, TMH
3. B.C Kuo: Automatic Control System, PHI.
4. K.M.soni : Automatic Control System, Katson pub.

OPTIMIZATION TECHNIQUES

Course/Paper: 06BEC-106
BEC Semester-VI

UNIT 1: INTRODUCTION -Historical development, engineering application of optimization, Formulation of design problems as a mathematical programming problem, Classification of optimization problems.

UNIT 2: LINEAR PROGRAMMING - Simplex methods, Revised simplex method, Duality in linear programming, post optimality analysis.

UNIT 3: Applications of Linear programming, Transportation and assignment problems.

UNIT 4: NON-LINEAR PROGRAMMING - Unconstrained optimization techniques, Direct search methods, Descent methods, Constrained optimization, Direct and Indirect methods.

UNIT 5: Dynamic Programming: Introduction, multi-decision processes, computational procedure

Reference

1. S . S. Rao: optimization _ Theory & application . Wiley Eastern .
2. H.A. Taha: Operation Reserch And Introduction. Mc millan Co.
3. A.O.Converse: Optimization , Halt Pinchort Inc..
4. jain & rawat “ Optimization technigue” CBC

COMMUNICATION LAB-II

Course/Paper: 06BEC-201
BEC Semester-VI

1. (a) To observe sampling of analog signal. Identify & solve the aliasing problem.
(b) To observe the Transmission of two signals over a single channel using sampling methods.
2. TDM-PAM: Modulation & demodulation.
3. Operation of a PCM encoder & decoder.
- 4 TDM-PCM: Modulation & demodulation.
5. Observe the performance of a Delta modulation system & to derive from it a delta sigma modulation system.
6. To generate and study the various data formatting schemes (Unipolar, Bi-polar, Manchester,AMI etc.).
7. Generate ASK signals, with and without carrier suppression. Demodulation of these two types of modulated signal.
8. Generate the FSK wave forms & demodulate the FSK signals based on the properties of
(a) Tuned circuits (b) PLL
9. Generate the PSK signals and demodulate it.
- Simulation using any virtual Instrumentation Software:**
10. To carry out convolution in both continuous time and discrete time systems.
11. Companding and multiplexing of PCM signals.
12. Perform various keying Techniques: PSK, ASK, FSK & MSK.

MICROPROCESOR LAB

Course/Paper: 06BEC-202
BEC Semester-VI

1. Study the hardware, functions, memory structure and operation of 8085 microprocessor kit.
2. Program to perform integer division: (i) 8-bit by 8-bit (ii) 16-bit by 8-bit.

3. Transfer of a block of data in memory to another place in memory in the direct and reverse order.
4. Searching a number in an array and finding its parity.
5. Sorting of array in: (i) Ascending (ii) Descending order
6. Programme to perform following conversion: (i) BCD to ASCII (ii) BCD to Hexadecimal
7. Programme to multiply two 8-bit numbers.
8. Programme to generate and sum 15 fibanocci numbers.
9. Programme for rolling display of message "INDIAN".
10. To insert a number at correct place in a sorted array.
11. Serial and Parallel data transfer on output port 8155 & 8255 & designing of disco light, running light, and sequential lights on off by above hardware.
12. Generation of different waveform on 8253/ 8254 programmable timer.

UNIX SHELL PROGRAMMING LAB

Course/Paper: 06BEC-203
BEC Semester-VI

1. Use of Basic Unix Shell Commands: ls,mkdir,rmdir,cd,cat,banner,touch,file,wc,sort,cut,grep, dd,dfspace,du,ulimit.
2. Commands related to Inode,I/O redirection and piping, process control commands, mails.
3. Shell Programming: Shell script exercises based on following
 - (i) Interactive shell scripts
 - (ii) Positional parameters
 - (iii) Arithmetic
 - (iv) if-then-fi, if-then-else-fi, nested if-else
 - (v) Logical operators
 - (vi) else + if equals elif, case structure
 - (vii) while, until, for loops, use of break
 - (viii) Metacharacters
 - (ix) System administration: disk management and daily administration
4. Write a shell script to create a file in \$USER /class/batch directory. Follow the instructions
 - (i) Input a page profile to yourself, copy it into other existing file;
 - (ii) Start printing file at certain line
 - (iii) Print all the difference between two file, copy the two files at \$USER/CSC/2007 directory.
 - (iv) Print lines matching certain word pattern.
5. Write shell script for-
 - (i) Showing the count of users logged in,
 - (ii) Printing Column list of files in your home directory
 - (iii) Listing your job with below normal priority
 - (iv) Continue running your job after logging out.
6. Write a shell script to change data format .Show the time taken in execution of this script.
7. Write a shell script to print files names in a directory showing date of creation & serial number of the file.
8. Write a shell script to count lines, words and characters in its input(do not use wc).
9. Write a shell script to print end of a Glossary file in reverse order using Array. (Use awk tail)
10. Write a shell script to check whether Ram logged in, Continue checking further after every 30 seconds till success.

INDUSTRIAL ELECTRONICS LAB

Course/Paper: 06BEC-204
BEC Semester-VI

1. Study the characteristics of SCR.
 - 1.1 Observe the terminal configuration.
 - 1.2 Measure the breakdown voltage.
 - 1.3 Measure latching and holding current.
 - 1.4 V-I characteristics.
- 2 Perform experiment on triggering circuits for SCR.
 - 2.1 R-triggering circuit.
 - 2.2 R-C triggering circuit.

- 2.3 UJT triggering circuit.
 3 Study and obtain the characteristics of Diac.
 4 Study and obtain the waveforms for single-phase half-wave controlled converter.
 5 Study and obtain the waveforms for single-phase half controlled symmetrical and asymmetrical bridge converters.
 6 Study and obtain the waveforms for single-phase fully controlled bridge converter.
 7 Study and obtain the waveforms for voltage-commutated chopper.
 8 Study and obtain the waveforms for current-commutated chopper.
 9 Perform experiment on single phase PWM inverter.
 10 Perform experiment on buck, boost and buck-boost regulators.
 11 Perform experiment on Motor control – open loop & closed loop.

VII SEMESTER

ANTENNA & WAVE PROPAGATION

Course/Paper: 07BEC-101
BEC Semester-VII

UNIT 1 : ANTENNA FUNDAMENTALS - Antenna parameters, Radiation from a current element in free space. Quarter & half wave antenna. Reciprocity theorem. Resonant and non-resonant antenna. Effective length and aperture, gain, beamwidth, directivity, radiation resistance, efficiency, polarization, impedance and directional characteristics of antenna, antenna temperature.

.UNIT 3 : ANTENNAS - V and Rhombic antennas, Folded dipole, Yagi-Uda antenna, Frequency independent antennas, Log-periodic antennas, UHF and Microwave antennas- Antenna with parabolic reflectors, Horn and Lens antennas, Helical antennas, Square and Circular loop antennas, Fundamentals of Slot and Microstrip antennas.

UNIT 2 : ANTENNA ARRAYS - Two element array, N-element linear arrays, Broadside, End fire, collinear and combination arrays, Multiplication of patterns, Binomial arrays. Effect of ground on antennas, Antenna loading.

Antenna Measurements - Antenna impedance, radiation pattern, gain, directivity, polarization and phase measurements

UNIT 4 : RADIO WAVE PROPAGATION - Mechanism of radio wave propagation, Reflection, Refraction interference and diffraction of radio waves. Theory of ground wave, space wave and sky wave propagation. Plane earth reflection, Reflection factors for horizontal and vertical polarizations. Duct propagation and tropospheric scattering.

UNIT 5 : Various Ionospheric layers. Characteristics of ionosphere and its effects on wave propagation. Critical frequency, Virtual height, skipzone & maximum usable frequency. Multiple hop transmission. Oblique & vertical incidence transmission. Effect of earth's magnetic field, solar activity and meteorological conditions on wave propagation.

Reference

1. J.D.Kraus, 'Antennas', Mc -graw Hill.
2. C.A.Balanis, 'Antenna Theory' Harper & Row.
3. K.D. Prasad, 'Antenna and Wave propagation', SATYA Prakashan, New delhi.
4. A.K.Gautam "Antenna & Wave propagation", Katson Pub.

DIGITAL SIGNAL PROCESSING

Course/Paper: 07BEC-102
BEC Semester-VII

UNIT 1 : SAMPLING - Discrete time processing of Continuous-time signals, continuous-time processing of discrete-time signals, changing the sampling rate using discrete-time processing.

UNIT 2 : TRANSFORM ANALYSIS OF LTI SYSTEMS - Introduction, The frequency response of LTI systems, System functions for systems characterized by LCCD (Linear Constant Coefficient Difference) equations, All-pass system, Minimum-Phase systems, Linear systems with linear phase.

UNIT 3 : STRUCTURES FOR DISCRETE-TIME SYSTEMS- Block diagram and signal flow graph representation of LCCD (LCCD – Linear Constant Coefficient Difference) equations, Basic structures for IIR and FIR systems, Transposed forms.

UNIT 4 : FILTER DESIGN TECHNIQUES - Introduction, Analog filter Design: Butterworth & Chebyshev. IIR filter design by impulse invariance & Bilinear transformation. Design of FIR filters by Windowing: Rectangular, Hanning, Hamming & Kaiser.

UNIT 5 : The Discrete Fourier transform (DFT), Properties of the DFT, Linear Convolution using DFT. Efficient computation of the DFT: Decimation-in-Time and Decimation-in frequency FFT Algorithms. Processing of speech signals: Vocoders, linear predictive coders.

Reference

1. Scahafer Buck-Discrete Time Signal Processing, Person Education Asia.
2. Prokis & Manolaski- Digital Signal Processing, PHI.
3. S.K.Mitra- Digital Signal Processing, TMH.
4. Faruq Hussain –“ Digital Signal Processing”
5. sanjay sharma – “digital signal processing” Katson Pub.

WIRELESS COMMUNICATION

Course/Paper: 07BEC-103
BEC Semester-VII

UNIT 1 : PROPAGATION PHENOMENA - Fundamentals of fading, Multipath channels, Spread Spectrum signals: Direct-sequence spread spectrum signals, p-n sequences, Frequency-hopped spread spectrum signals, Code-division multiplexing.

UNIT 2 : LINE OF SIGHT MICROWAVE COMMUNICATION- Link Engineering, Frequency planning, Free space loss, Fresnel zone clearance bending of radio beam, Effective earth radius, Building blocks of Transmitter & Receiver.

UNIT 3 : MULTIPLE ACCESS TECHNIQUES - FDMA, TDMA and CDMA with reference to mobile radio and satellite systems. TDMA based networks. CDMA based networks,

UNIT 4 : CELLULAR WIRELESS NETWORKS-, GSM: Introduction, overview of the GSM systems, GSM codec, channel coding and interleaving, radio like control. Cordless systems and WLL, Mobile IP, Wireless access protocol. Wireless LAN's: Technology, IEEE 802.11 standards and Blue tooth. Broadband Wireless 802.16

UNIT 5 : SATELLITE COMMUNICATION - Elements of satellite communication: Frequency bands, Transmission and multiplexing. Modulation, Multiple access. Satellite orbit and description- orbital period and velocity, effects of orbital inclination, Azimuth and elevation, Coverage angle and slant range, Geostationary orbit, Satellite description. Earth Station antenna, high-power amplifier, low-noise amplifier, up converter, down converter, monitoring and control, reliability. Satellite Link: basic link analysis,

Reference

1. Reappaport- Wireless Communication, Pearson Education .
2. William Stallings- Wireless Communication & Network, Pearson education, Asia .
3. Richharia M- Sattelite communication, mac Millan.
4. R.P.Yadav –“wirless Communication ”
5. modani – “wirless Communication” Genius pub.

IC TECHNOLOGY

Course/Paper: 07BEC-104
BEC Semester-VII

UNIT 1 : INTRODUCTION TO TECHNOLOGIES- Semiconductor Substrate-Crystal defects, Electronic Grade Silicon, Czochralski Growth, Float Zone Growth, Characterization & evaluation of Crystals; Wafer Preparation- Silicon Shaping, Etching and Polishing, Chemical cleaning.

UNIT 2 : DIFFUSION & ION IMPLANTATION- Ficks diffusion Equation in One Dimension, Atomic model, Analytic Solution of Ficks Law, correction to simple theory , Diffusion in SiO₂. Ion Implantation and Ion Implantation Systems Oxidation. Growth mechanism and Deal-Grove Model of oxidation, Linear and Parabolic Rate co-efficient, Structure of SiO₂, Oxidation techniques and system, Oxide properties.

UNIT 3 : CHEMICAL VAPOUR DEPOSITION AND LAYER GROWTH- CVD for deposition of dielectric and polysilicon – a simple CVD system, Chemical equilibrium and the law of mass action, Introduction to atmospheric CVD of dielectric, low pressure CVD of dielectric and semiconductor. Epitaxy-Vapour Phase Epitaxy, Defects in Epitaxial growth, Metal Organic Chemical Vapor Deposition, Molecular beam epitaxy.

UNIT 4 : PATTERN TRANSFER- Introduction to photo/optical lithography, Contact/ proximity printers, Projection printers, Mask generation, photoresists. Wet etching, Plasma etching, Reaction ion etching.

UNIT 5 : VLSI PROCESS INTEGRATION- Junction and Oxide Isolation, LOCOS methods, Trench Isolation, SOI; Metallization, Planarization. Fundamental consideration for IC Processing, NMOS IC Technology, CMOS IC Technology, Bipolar IC Technology.

Reference

1. S.M.Sze- VLSI Technology, TMH.
2. kang- CMOS circuit design, TMH .
3. D.Nagchoudhary-principles of microelectronic Technology, Wheeler Publishing.
4. P.k. malhotra – “I C Technology” CBC
5. Arti sharma – “IC Technology”- Genius Pub.

VLSI DESIGN

Course/Paper: 07BEC-105
BEC Semester-VII

UNIT 1 : INTRODUCTION TO MOS TECHNOLOGY- Basic MOS transistors, Enhancement Modetransistor action, Depletion Mode transistor action, NMOS and CMOS fabrication.

UNIT 2 : BASIC ELECTRICAL PROPERTIES OF MOS CIRCUITS- I_{ds} versus V_{ds} relationship, Aspects of threshold voltage, Transistor Transconductance g_m. The nMOS inverter, Pull up to Pull-down ratio for a NMOS Inverter and CMOS Inverter (B_n/B_p), MOS transistor circuit Model, Noise Margin.

UNIT 3 : CMOS LOGIC CIRCUITS- The inverter, Combinational Logic, NAND Gate NOR gate, Compound Gates, 2 input CMOS Multiplexer, Memory latches and registers, Transmission Gate, Gate delays, CMOS-Gate Transistor sizing, Power dissipation.

UNIT 4 : Basic physical design of simple Gates and Layout issues. Layout issues for inverter, Layout for NAND and NOR Gates, Complex Logic gates Layout, Layout optimization for performance.

UNIT 5 : Introduction to VHDL, Prolog & other design tools. VHDL Code for simple Logic gates, flip-flops, shift registers.

Reference

1. Pucknell, Kamaran Esragian- Basic VLSI Design.
2. kang- CMOS circuit design, TMH .
3. Stephen Brown -Fundamental of design logic with VHDL , TMH.
4. P.k.malhotra-“VLSI Desgin ” CBS

OPERATING SYSTEMS

Course/Paper: 07BEC-106
BEC Semester-VII

UNIT 1 : INTRODUCTION – History, Operating system services, types, responsibilities, generations, LINUX, WINDOWS.

UNIT 2 : PROCESS MANAGEMENT- Operations on process, Process state, Scheduling, Criteria, scheduling algorithms, Evaluation, Synchronization, Semaphores, Monitors.

UNIT 3 : MEMORY MANAGEMENT- Swapping, Continuous memory allocation, Paging, Pure paging, Demand paging, Page-replacement algorithms, thrashing, Example-Pentium, Disk Scheduling.

UNIT 4 : INFORMATION MANAGEMENT- File and directory concept, Access methods, Protection, Free space management, Efficiency and performance, Access matrix, Capability-based systems, Program threats, User authentication, Firewall.

UNIT 5 : DEAD LOCKS- System model, Dead lock characterization, Deadlock prevention, Avoidance, Detection, Recovery, Classic problems of synchronization.

Reference

1. Andrew S. Tanenbaum- modern Operating System , PHI
2. J. Peterson , a. Silberschatz – operating System Concepts .
3. H.M. Deitl- An introduction to Operating system , Addison Wesley.
4. Rajeev Chauhan "Operating System" S.Chand.

PRINCIPLES AND PRACTICE OF MANAGEMENT

Course/Paper: 07BMD101
B.TECH+B TECH+MBA Semester-VII

Objective:

This course provides the student with an understanding of how the philosophy of management underlies the B.TECH+B TECH+MBA course taught on the program. The objective of this paper is to familiarize the student with basic management concepts and behavioral processes in the organization. The course will be an introduction to the way in which a firm can develop its managerial thinking, mission and strategy. It will enable students to evaluate and analyze a firm's management.

Philosophy, to understand the impact this philosophy has on the organization and operation of the business.

Section A

Management an Overview, Management Defined, Functions of Management, Managerial Roles and responsibilities, System and Contingency Approach for understanding organizations, Management Thought-Classical Perspective, Scientific Management, Administrative Management, Bureaucratic Management, Behavioral Perspective. Managerial processes, functions, skills and rules in an organization, social responsibilities of Business.

Fundamentals of Planning - Objectives, Strategies, Policies, Decision-making.

Fundamentals of Organizing- Nature and purpose, departmentation, Span of Management, Strategic organizing design, line and staff authority and decentralization.

Direction-concept, Leadership- Meaning and Importance, transitions in leadership theories, trait theories, behavioral theories, contingency theories, leadership styles and skills, managerial culture and leadership. Coordination.

Control- concept, nature and purpose, control technique, control of overall performance, span of control.

Section-B

Case Study

References:

1. Management, Stonner, James & Others, Pearson Education N.D.
2. Management, Robbins & Coulter, Pearson Education N.D.
3. Principles of management, R.L. Nolakha , R.B.D. Jaipur
4. Principle of Management, Parthasarathy, Vrinda N.D.
5. Principle & practise of management, P.Subharao, Hari Shanker Pandey, Ramesh Book Depot
6. Management, G.S.Sudha, R.B.D. Jaipur

MANAGERIAL ECONOMICS

Course/Paper: 07BMD102
B.TECH+B TECH+MBA Semester-VII

Objective:

With economies becoming increasingly market oriented, it is becoming important for players in the market place to learn to conduct them in a manner that will assure them of success. The objective of the course is to provide insights into these aspects. Students of management must be exposed to the time tested tools and techniques of managerial economics to enable them to appreciate their relevance in decision-making.

Section-A

Nature and Scope of Managerial Economics, role and Responsibility of a Managerial Economist. The fundamental concepts of Managerial Economics, theory of the firm and the role of profits

Theory of Demand- concept, determinants of Demand, Demand Function and econometric techniques. Theory of Supply- concept, determination, analysis, supply function. Elasticity of Demand- concept, measurement. Concept of Consumer's surplus.

Analysis and costs estimation-economic Concept of Cost, Different Types of Cost: Managerial uses of cost Function; Production Function to cost function-long run and short run total cost, Break-even Analysis. Make or Buy Decisions.

Market structure and pricing decisions-the competitive and monopoly model, monopolistic competition and oligopoly, pricing of multiple products.

National income-concept and measurement. Business cycles, fiscal policy, Inflation. The new economy-definition and characteristics.

Section-B

Case study.

References:

1. Business Economics, Adhikary, manab, Excel books, N.D.
2. Economic Theory & Operation Analysis, Baumol, William J, N.D. PHI.
3. Business Economics, Agarwal & Deo, N.D. PHI.
4. Managerial Economics, D.N. Dwivedi, N.D. PHI.
5. Managerial Economics, Jhingen & Stephen, N.D. PHI.
6. Managerial Economics, Mote Others, N.D. PHI
7. Managerial Economics, Saraswat Iodha, Ajmera Book depot.
8. Managerial Economics, Nair, Banerjee & Agarwal, Pragati Prakashan, Meerut.

INTERNATIONAL BUSINESS MANAGEMENT

Course/Paper: 07BMD103
B.TECH+B TECH+MBA Semester-VII

Objectives:

To develop an integrated understanding of International management aspects for devising and implementing Global management Strategies.

Section A

International business concept, nature, importance, dimensions, domestic and international business, process of internationalization-decision framework for internationalization. International trade theories, foreign direct investment theories, international business environment social, political, cultural and legal Globalization, rationalization: regional economic integration in Europe, NAFTA, role of regional and international institution: WTO, IMP, UNCTAD, SAARC in international trade, intellectual property in global business, role of WIPO.

Foreign exchange market, international monetary system

Method of entry in foreign markets, licensing, franchising, joint venture, subsidiaries, acquisition, strategic alliances, contract manufacturing.

International business: product decisions, market selection, distribution, promotion international pricing-factors, process and method, prerequisites. Transfer pricing, dumping, Control in international business: need objectives and approaches.

Section-B

Case Study

References:

1. International Business, K.Asawathappa, Tata McGraw Hill.
2. International Business, Charles W L hill, Arun K Jain, TataMcGraw Hill.
3. International Management, Managing in a Diverse & Diverse & Dynamic Global Environment, Arvind V Phatak, Rabi S. Bhagat. Tata Mc Graw Hill.
4. International Business, Donald Ball, Michael Geringer, Michael Minor, Tata Mc Graw Hill.
5. International Business management, Pragati Agarwal, Pragati prakashan, , Meerut.

SIGNAL PROCESSING LAB-II

Course/Paper: 07BEC-201

BEC Semester-VII

Modeling and simulation using MAT LAB

1. Realising a given block diagram having multiplier, adder/subtractor and system (Discrete/Continuous) with given Impulse response. Calculating output for given input.

2. To simulate the transmitter and receiver for BPSK

3. To design and simulate FIR digital filter (LP/HP).

4. To design and simulate IIR digital filter (LP/HP).

DSP Lab using TMS320C6XXX DSP Kits

5. To study the architecture of TMS320C6XXX DSP kits using Bloom with DSP.

6. To generate wave form (SINE, COSINE, SQUARE & TRIANGULAR).

7. Verification of Sampling Theorem.

8. Verification of linear/circular convolution.

9. To design FIR and FIR digital filter (LP/HP).

WIRELESS COMMUNICATION LAB

Course/Paper: 07BEC-202

BEC Semester-VII

1. Measurement of antenna characteristics :

Radiation Pattern on polar plots, Beam width and Gain of main lobe for the following types of antennas.

- (a) Half wave and quarter wave dipole
- (b) Folded dipole
- (c) Yagi UDA multiple element folded dipole
- (d) Hertz Antenna
- (e) End fire array and broad side array
- (f) Helix antenna
- (g) Paraboloid reflector antenna
- (h) Loop antenna
- (i) Ground plane antenna
- (j) Log periodic antenna
- (k) Rhombus antenna
- (l) Slot antenna

2. Demonstration of modeling of wire antenna using appropriate design software.

3. Simulation of antenna arrays using appropriate software.

4. Design and testing of microstrip rectangular patch antenna using appropriate software.

5. Investigate the transmission characteristics of the link and measure the gain of the microstrip patch antennas. Draw the antenna radiation diagram.

6. Radar Trainer: Working of Doppler radar, velocity of moving object, time and frequency measurement and other applications.

7. To perform Modulation, Demodulation and BER measurement using CDMA – DSSS Trainer.

8. To establish analog/digital communication link and transmit & receive three signals (audio, video, tone) simultaneously using Satellite Communication Trainer.

9. To study GPS Receiver, establishing link between GPS satellite & GPS trainer and measure of latitude & longitude

TRAINING SEMINAR & INDUSTRIAL VISIT

Course/Paper 07BEC 203

IPE semester VII

Industrial visit (20 marks) is for the duration of 10 days at the end of V semester and

Practical Training (80 marks) is for the duration of 30 days at the end of VI semester.

Both will be evaluated during the VII semester.

PROJECT STAGE-I

Course/Paper: 08BEC-204

BEC Semester-VIII

OBJECTIVE

The objective of the project work is to enable the students in convenient groups of not more than 3 members on a project involving theoretical and experimental studies related to the branch of study. Every project work shall have a guide who is the member of the faculty of the institution.

The student should select any one of the topics offered from the department or select one on his own duly approved from the department. Candidate is required to submit the detailed synopsis of the work that he would complete in the part-II

Each student shall finally produce a comprehensive report covering back ground information, literature survey, problem statement, project work details and conclusion. This final report shall be typewritten form as specified in the guidelines.

The along with the report of the work already completed

VIII SEMESTER

COMPUTER NETWORKS

Course/Paper: 08BEC-101
BEC Semester-VIII

UNIT 1: QUEUING THEORY- Pure birth, Pure death & Birth-death processes, Mathematical models for M/M/1, M/M/∞, M/M/m, M/M/1/K and M/M/m/m queues. Little's formula. M/G/1 Queuing model basics.

UNIT 2: DATA LINK LAYER - Packet & Circuit switching, OSI & TCP/IP Reference Models, Framing, Simplex protocol, Simplex stop & wait protocol, Sliding window protocol, Go back N protocol, selective repeat, HDLC, Data link layer in internet.

UNIT 3: MEDIUM LAYER- Static & dynamic channel allocation, Multiple Access Protocols: ALOHA, slotted ALOHA, CSMA, Token Bus, Token Ring, FDDI, IEEE standards 802.2, 802.3 Hubs, Bridges, Routers & Gateways.

UNIT 4: NETWORK LAYER- Network layer Design issues. Adaptive & Non-adaptive routing algorithms, Congestion control algorithms for TCP/IP networks, Internetworking, Network layer in the Internet: IPv4 & IPv6 Protocols, OSPF and BGP. TCP Protocol architecture.

UNIT 5: ATM NETWORKS- Connection Oriented Networks: X.25, Frame Relay & ATM. ISDN system architecture. Broadband ISDN. ATM Protocol architecture, Recognition Algorithm in ATM Networks, Congestion control Algorithms.

Reference

1. Tanenbaum- Computer Network , Pearson Education of Asia .
2. Frouzan – Data communication and Networking , TMH .
3. Stallings- Data & Commuter communication, persons Educationn Asia .

RADAR & TV ENGINEERING

Course/Paper: 08BEC-102
BEC Semester-VIII

UNIT 1: RADAR - Radar Block diagram, frequencies and applications. Radar range equation. Continuous wave (CW) & FM radar; Moving target indicator (MTI) : Delay line cancellers, blind velocity Pulse Doppler Radar. Tracking radar sequential lobbing, Conical scan and monopulse radar, Types of display, Radar receivers, Noise figure.

UNIT 2: NAVIGATIONAL AIDS - Principle of operation of Radar direction finder & range system. LORAN system, DME, TACAN, Aircraft landing systems.

UNIT 3: TV ENGINEERING- Theory of scanning standards, Principles of Monochrome and colour T.V. system (PAL, SECAM, NTSC). Composite video signal analysis. T.V Cameras : Image orthicon, plumbicon, vidicon. CCD camera tubes. Types of Monochrome and colour picture tubes, set-up adjustments. LCD and Plasma displays

UNIT 4: Picture, colour and sound carriers. Vestigial side band transmission. Encoding picture information. Chrominance modulation. Compatibility of colour and monochrome T.V. systems. Block diagram of T.V. transmitters. TV transmission & reception antennas.

UNIT 5: TV RECEIVER: Functional block diagram of T.V. receiver, R.F. Tuner, I.F. amplifier, Video detector, video amplifier, AGC, Synch. Separation, Sync. Processing and AFC. Deflection oscillators,

vertical & horizontal deflection and sound system circuits. EHT generation. Common faults and their diagnosis. Basic idea of HDTV, DBS-TV and 3D-TV.

Reference

1. M.I.Skonik –'introduction to radar system' mc –graw Hill.
2. N.S.Nagaraja, "Elements of Electronic Navigation" , TMH .
3. R.R.Gulati-Monochromaic & colour television, Wiley Eastern.
4. Kulkarni "microwave & radar engg." Laxmi pub.

OPTICAL COMMUNICATION

Course/Paper: 08BEC-103
BEC Semester-VIII

UNIT 1 : OPTICAL FIBERS - Basic optical laws and definitions, Principles of light propagation in fibers, Ray theory, Optical fiber modes and configurations, Step index and graded index fibers, Monomode and multimode fibers, Fiber materials, fiber fabrication, Fiber optic cables. Attenuation, signal distortion in optical fibers, Dispersion-intra modal & inter modal, Dispersion shifted and flattened fiber.

UNIT 2: OPTICAL SOURCES - LED's- Structure, Materials, Characteristics, Modulation, Power & efficiency, Laser Diodes - Basic concept, Hetro Structure, properties and modulation.

UNIT 3: OPTICAL DETECTORS - PIN and Avalanche photo diodes, photo detector noise, detector response time, Avalanche multiplication noise. Photo diode materials. Fundamental of Optical Receiver Operation.

UNIT 4: OPTICAL FIBER COMMUNICATION SYSTEMS- Source to fiber coupling, fiber to fiber joints, fiber splicing, fiber connectors. Principal components. Link design calculation, Applications, Wavelength division multiplexing.

UNIT 5: OPTICAL FIBER MEASUREMENTS: Measurements of Fiber attenuation, Dispersion, refractive index profile, Numerical aperture & diameter.

Reference

1. Gerd Keiser- Optical Fiber Communication, TMH .
2. J.N.Senior - Optical Fiber Communication, PHI
3. J.gowar- . - Optical Communication system ,PHI.
4. preeti maswari-"Optical communicatio" Genius Pub.

IMAGE PROCESSING AND PATTERN RECOGNITION

Course/Paper: 08BEC-104.1
BEC Semester-VIII

UNIT 1: INTRODUCTION: Imaging in ultraviolet and visible band. Fundamental steps in image Processing. Components in image processing. Image perception in eye, light and electromagnetic Spectrum, Image sensing and acquisition using sensor array.

UNIT 2: DIGITAL IMAGE FUNDAMENTALS: Image sampling and quantization, Representing digital images, Spatial and gray-level resolution, Aliasing and Moiré patterns, Zooming and Shrinking digital images.

UNIT 3: IMAGE RESTORATION: Image restoration model, Noise Models, Spatial and frequency properties of noise, noise probability density functions, Noise - only spatial filter, Mean filter Statistic filter and adaptive filter, Frequency domain filters - Band reject filter, Band pass filter and Notch filter.

UNIT 4: IMAGE COMPRESSION: Compression Fundamentals - Coding Redundancy, Interpixel redundancy, Psycho visual redundancy and Fidelity criteria. Image Compression models, Source encoder and decoder, Channel encoder and decoder, Lossy compression and compression standards. color space

formats, scaling methodologies (like horizontal, vertical up/down scaling). Display format (VGA, NTSC, PAL).

UNIT 5: EXPERT SYSTEM AND PATTERN RECOGNITION: Use of computers in problem solving, information representation, searching, theorem proving, and pattern matching with substitution. Methods for knowledge representation, searching, spatial, temporal and common sense reasoning, and logic and probabilistic inferencing. Applications in expert systems and robotics

Reference

1. Rafel c. Gonzalez-Digital Image processing , Pearson education Asia .
2. Nick Effard- Digital Image Processing, Pearson Education asia .
3. jain A.K- - Digital Image Processing, PHI.

VHDL

Course/Paper: 08BEC-104.2
BEC Semester-VIII

UNIT 1: INTRODUCTION – Fundamental & history of various hardware description language, Design flow of ASICs and standard logic circuits using software.

UNIT 2 : COMBINATIONAL CIRCUIT BUILDING BLOCKS- Multiplexer, Decoders, encoders, Code Converters, VHDL Code for Combinational Circuits.

UNIT 3 : SEQUENTIAL CIRCUITS: VHDL code for Flip-Flops, shift registers, Counters.

UNIT 4 : SYNCHRONOUS/ ASYNCHRONOUS SEQUENTIAL CIRCUITS: Mealy & Moore type FSMs, VHDL Code for Mealy & Moore Machines, VHDL Codes for Serial Adder, Vending Machine.

UNIT 5 : DIGITAL SYSTEM DESIGN- Building Block circuits, Memory organization, SRAM, Design examples of divider, Multiplier, Shifting & Sorting Operations, Clock Synchronization, CPU organization and design concepts.

Reference

1. Stephen brown and Zvonko Vranic- Fundamental of digital logic circuit, TMH .
2. D.L.PERRY – vhd3 ED, TMH.
3. Morris Mano- Digital Logic & Computer Design , PHI .
4. J.Bhaskar- Vhdl premier- prentice hall.

MICROCONTROLLER AND EMBEDDED SYSTEMS

Course/Paper: 08BEC-104.3
BEC Semester-VIII

UNIT 1 : THE 8051 MICROCONTROLLER: Introduction, The 8051 microcontroller hardware, I/O pins, Port, External memory, Counters and Timers, Serial data. Interrupts.

UNIT 2 : 8051 ASSEMBLY LANGUAGE PROGRAMMING: Addressing modes, External data moves, push and pop opcodes, Logical operations, Byte level and bit level logical operations. Arithmetic operations, Jump and call instructions, Interrupts & returns.

UNIT 3: REAL TIME CONTROL: Interrupts, Multiple sources of interrupts, Non maskable sources of interrupts, Interrupt structure in 8051, Timers, Free running counter & Real Time control .

UNIT 4: SYSTEM DESIGN: Serial I/O interface, Parallel I/O ports interface, Digital and Analog interfacing methods, LED array, keyboard, Printer, Flash memory interfacing.

UNIT 5: INTRODUCTION TO EMBEDDED SYSTEM: Application of Microcontrollers in interfacing, Robotics, MCU based measuring instruments. Real Time Operating System for System Design, Multitasking System, Task Definition in a Multitasking System, Round Robin Scheduling, Full Pre-emptive Scheduling, Basic study and Features of Commercial RTOS: WINCE and Embedded Linux.

Reference

1. David simon –An Embedded softwaerprimer, pearson Education Asia .
2. K.J. Ayle- The 8051 Microcontroller, penram International .
3. M.A.Mazdi & J.G.Mazidi-The 8051 Microcontroller And Embedded , Pearson Education Asia .

HUMAN RESOURCE MANAGEMENT

Course/Paper: 08BMD101

B.TECH+B TECH+MBA Semester-VIII

Objective:

To become a successful manager of people, students need to understand behavior of human resources in various organizational situations. In a complex world of industry and business, organizational efficiency is largely dependent on the contribution made by the human resources of the organization. The objective of this course is to sensitize students to various facts of managing people and to create an understanding of the various policies and practices of human resource management.

Section-A

Human Resource Management-. Introduction and Scope, HRD-Concept, Need, Human Resource Planning-Concept, Process, job design-Concept approaches, job analysis, job description, job specification. Human Resource Procurement-Recruitment. Selection and induction. Training, Training phases, Need Assessment, Establishment, Establishment of Training Objectives, Training method Lecture, case method, Role-playing. Business in Basket T- Group, Incident, Syndicate, Evaluation of a training Program. Performance measurement and reward systems-introduction, performance drivers, leadership and performance, reward management performance appraisals. Discipline. The grievance procedure. Employee compensation-purpose and importance, components. non monetary rewards, workers participation in Management Employee. Strategic challenges for leadership, career management, SHRM Mergers and acquisitions.

Section-B

Case/Problems.

References:

1. Human Resource & Personal Management, Aswathappa K, TMH N.D.
2. Human Resource Mangement, L.M.Prasad, S.Chand
3. Human Resource Management, V.S.P.Rao, Excel books, N.D
4. International Human Resource management, Chris Brewster, University Press
5. Human Resource Management, Mizra S Saiyadain, Tata McGraw Hill.
6. Human Resource management, H.John Bernardin, Tata McGraw Hill

MARKETING MANAGEMENT

Course/Paper: 08BMD102
B.TECH+B TECH+MBA Semester-VIII

Objective:

Marketing is no longer a company department charged with a limited number of tasks- it is a company wide undertaking. It drives the company's vision, mission and strategic planning. Marketing succeeds only when all departments work together to achieve goals. The student will be able to understand these concepts.

Section-A

Understanding Marketing Management-Importance and scope. Marketing strategies and plans marketing and customer value. Marketing insights-information and scanning the environment, analyzing the macro environment. Rural Marketing: The profile of rural market of India. The main problem area in rural marketing, channel Management in rural markets, marketing communication in Rural Markets, Market Segmentation in rural market.

Consumer Behavior and market segmentation- Targeting and positioning as per the changing pattern of Indian consumers-levels of market segmentation, segmenting consumer markets, market targeting. Product Life Cycle Strategy, New Product Development Strategy.

Management of Marketing Efforts: building brands dealing with competition, competitive brand strategy. Product Policy and Pricing decision, Channels of distribution.

Managing the Marketing program-advertisement, sales promotion, direct marketing and Personal selling, interactive marketing (E-Marketing) Marketing Research and Information System.

Section-B

Case Study

References:

1. Marketing Management, Kotler Philip Keller.
2. Marketing Management Planning & Implementation, Ramaswamy & Namakumari,
3. Principle of Marketing, Kotler & Aemstrong, Pearson Education N.D.
4. Marketing Management, Datta & Datta, Pearson Education N.D.
5. Marketing management, Kumar meenakshi, vikas publishing house.
6. Marketing management, kothari Sharma Mehta, RBD
7. Marketing management, P.K. Agarwal, Pragati prakashan, Meerut.

FINANCIAL MANAGEMENT

Course/Paper : 08BMD103
B.TECH+B TECH+MBA Semester-VIII

Objective:

The focus in this paper would be on issues related to financial management in the Indian Corporate Sector. The contents are related to the practices observed in Indian Corporate Sector. The objective is to enable and equip the manager with basic tools for applying financial analysis.

Section-A

Meaning, Importance and Objectives of Financial Management; Time value of money; Conflicts in profit versus value maximization principle; Functions of chief financial officer.

Risk and Return- overview of capital market theory, Beta Estimation, CAPM, and APT.

Management of working capital; Cash and Marketable securities management; Treasury Management, Receivables management, Inventory management, Financing of working capital.

Investment decisions: Capital budgeting- concept, theory. Cost of capital. Risk analysis in capital budgeting.

Financing decisions: Concepts of operating and financial leverage; Capital structure Theory and Policy; Dividend Policy. Different sources of finance: Asset Based financing- Lease, Hire Purchase and Project Financing. Corporate Restructuring, Merger and Acquisition.

Section-B

Case/Problems

Note: 50% of the question will be numerical.

References:

1. Principle of Corporate Finance, Brealy & Hyres, TMH N.D
2. Financial Management & policy, Horne James C. Van, TMH N.D
3. Financial Management, Khan Jain, TMH N.D
4. Financial Management, M.R.Agarwal, Garima Publication.
5. Financial Management, Prasan Chandra, Tata Mc graw hill.
6. Financial Management(Strategy Implementation & Control), Kapil Sheeba, Kapil K.N., Pragati Prakashan, Meerut.

MANAGEMENT INFORMATION SYSTEM

Course/Paper: 08BMD104

B.TECH+B TECH+MBA Semester-VIII

Objective:

The course is an introduction of computer architecture, networks and software tools. This will help students to understand the role of information systems and technology with current business and management application.

Section-A

Information & System Concepts-Introduction --Concepts, Classification of Information, Methods of Data & Information Collection, Value of Information, Organization and Information, System: A Definition. Types of Systems, System Decomposition, Integration of Sub Systems, Elements of a System, Human as an Information Processing System. International Business and IT.

Management Information System-MIS: Definition, Nature & Scope, MIS Characteristics, Functions, Structure of MIS, Role of MIS, MIS as a Control System, Process of Management, Application of MIS, ERP & IT's Benefits.

Internet-Introduction to Internet, Why We Need Internet, Internet Tools & Services, www, Internet in India, Security, Web Browser, Future of Internet, E-Comm. an Introduction, E-Business Fundamentals.

New Information Technology: Interconnection and networking, Multimedia, Neural Networks, Artificial Intelligence, Executive Information System, Decision Support System (DSS) and Expert Systems.

Issues for Senior Management: Management Control, Management Issues, Security Issues: Viruses, Worms and other creatures, I T issues for Management, Management in a Technological Environment, the changing world of Information.

Section-B

Case Study.

References:

1. Computer Fundamental Concepts & system, P. K. Sinha, BPB PUB. N.D.
2. Management Information System, Jawadekar, macgraw Hill, N.D.
3. Management Information System, Lucas, macgraw Hill, N.D.
4. Management Information System, Davis, TMH
5. Information System Solutions: A Project Approach, Van Horne.TMH
6. Management Information System , O'Brien, TMH
7. Management Information System, Haag, TMH.

8. Management Information System, James O' Brain, Tata McGrawHill.
9. Management Information System, Dharminder Kumar/Sunita, Excel Books, Delhi.
10. Managing With Information, Jerome Kanter, Prentise Hall Of India.
11. Management Information System: managing the digital firm, laudon & laudon, pearson education.
12. Information system for modern management, Murdick, Ross & Clagget, Prentice hall/pearson
13. Business Information System, Muneesh Kumar, Vikas Publishing house.

COMPUTER NETWORK PROGRAMMING LAB

Course/Paper: 08BEC-201
BEC Semester-VIII

1. **PRELIMINARIES:** Study and use of common TCP/IP protocols and term viz. telnet rlogin ftp, ping, finger, Socket, Port etc.
2. **DATA STRUCTURES USED IN NETWORK PROGRAMMING:** Representation of unidirectional, Directional weighted and unweighted graphs.
3. **ALGORITHMS IN NETWORKS:** computation of shortest path for one source-one destination and one source –all destination.
4. **SIMULATION OF NETWORK PROTOCOLS:**
 - (i) Simulation of M/M/1 and M/M/1/N queues.
 - (ii) Simulation of pure and slotted ALOHA.
 - (iii) Simulation of link state routing algorithm.
5. **Case study : on LAN Training kit**
 - (i) Observe the behavior & measure the throughput of reliable data transfer protocols under various Bit error rates for following DLL layer protocols.
 - Stop & Wait
 - b. Sliding Window : Go-Back-N and Selective Repeat
 - (ii) Observe the behavior & measure the throughput under various network load conditions for following MAC layer Protocols
 - a. Aloha
 - b. CSMA, CSMA/CD & CSMA/CA
 - c. Token Bus & Token Ring
6. **DEVELOPMENT OF CLIENT SERVER APPLICATION:**
 - (i) Develop 'telnet' client and server which uses port other than 23.
 - (ii) Write a finger application which prints all available information for five users currently logged on and are using the network for longest duration. Print the information in ascending order of time.

INDUSTRIAL ECONOMICS & MANAGEMENT

Course/Paper: 08BEC-202
BEC Semester-VIII

UNIT 1 : Organizational forms, Profit maximization and other objectives of industrial firms, Theory of profitability, Economies of scale. Financing of Industries- Need and sources of finance, Role of special financial institutions, Investment criteria-NPV, IRR.

UNIT 2 : Approaches to industrial location analysis, Productivity analysis, Input-Output analysis, Concentration of economic power. New Industrial Policy – Critical analysis, Role of technology and entrepreneurship in industrial development.

UNIT 3: Management – Principles of management, functions-planning, Organization staffing, Directing, Controlling, Coordination, Decision making.

UNIT 4 : Production Management – Total quality management, JIT, Quality circle, Quality-ISO9000, ISO14000, KANBAN, Bench marking, Effective communication.

UNIT 5: Labour Legislations.

VLSI & Optical fiber LAB

**Course/Paper: 08BEC-203
BEC Semester-VIII**

PART-I

Schematic design and make Device Level Layout of following circuits.

1. BJT/FET Amplifier in various configuration..
2. Counters, Shift Registers & Sequence Decoders.
3. Various circuits with Op-Amp.

PART-II

Design of following ckt using appropriate software like VHDL/ FPGA.

4. 3-input NAND gate.
5. Half adder.
6. D-Latch.
7. Serial in-serial out shift register.

PART-III

To perform following experiments based on Fiber Optic Trainer.

8. To set up Fiber Optic Analog link.
9. To set up fiber Optic Digital link.
10. Measurement of Propagation loss and numerical aperture.
11. Characterization of laser diode and light emitting diode.

PROJECT STAGE II

**Course/Paper: 08BEC-204
BEC Semester-VIII**

OBJECTIVE

The objective of the project work is to enable the students in convenient groups of not more than 3 members on a project involving theoretical and experimental studies related to the branch of study. Every project work shall have a guide who is the member of the faculty of the institution.

The student should select any one of the topics offered from the department or select one on his own duly approved from the department. Candidate is required to submit the detailed synopsis of the work that he would complete in the part-II

Each student shall finally produce a comprehensive report covering back ground information, literature survey, problem statement, project work details and conclusion. This final report shall be typewritten form as specified in the guidelines.

The along with the report of the work already completed

SEMINAR

**Course/Paper: 08BEC-205
BEC Semester-VIII**

OBJECTIVE

The students are to select one technical topic related its branch for Seminar. The student is to submit the synopsis for assessment and approval. Progress for preparation of the seminar topic would be continuously assessed from time to time. Two periods per week are to be allotted and students are expected to present the seminar Progress. A faculty guide is to be allotted and he / she will guide and monitor the progress of the student and maintain the attendance.

Students have to give a final presentation for 15 minutes on his topic. Students are encouraged to use various teaching aids such as over head projectors, power point presentation and demonstrative models. This will enable them to gain confidence in facing the placement interviews

IX SEMESTER

BUSINESS POLICY AND STRATEGIC MANAGEMENT **(COMPULSORY PAPER)**

Course/Paper: 09BMD101

B.TECH+B TECH+MBA Semester-IX

Objective:

The objective of the course to equip the students with analytical tools for Cracking case studies by scanning the business environment and coming to a decision. The students will benefit by acquiring new ways and means of developing strategic decision-making skills.

Section-A

Business policy-evolution of the concept. Difference between business policy and strategic management. Corporate governance- concept, issues, models, evolution and significance. Introduction to Strategic Management-Concept importance of strategic Management, types of Strategy. Strategy & Competitive Advantage, Strategy Planning & Decisions, strategic Management Process.

Establishing company direction-developing strategic vision, setting objectives and crafting a strategy- Internal, Operating & External Environment, Formulating Long Term objective & Strategy, Strategic Analysis & Choice. Industry and competitive analysis, strategy and competitive advantage, Principles of Competitive Advantage-Identifying Value Activities, Competitive Scope and the Value Chain, the Value Chain and Generic Strategies, Mergers & Acquisitions Strategies.

Strategy Implementation & Structure of strategy, Resource Management and Control, Ethics, Public Values & Social Responsibility

Strategy Evaluation & Control.

Section-B

Case Study.

References:

7. Strategic Management, P.K.Ghosh, S.Chand New Delhi.
 8. Business Policy & Strategic Management, Dr. S.S. Chawhan, Proff. B.K.Garg. ABD
 9. Business Policy & Strategic Management, Azahar Kazmi, TMH N.D..
 10. Strategic Planning Formulation of Corporate Strategy, Ramaswamy & Namakumari, Macmillian N.D.
 11. Business Policy & Strategic Planning, Tauch & Glueck, Frank Bros & Co
 12. Cases in Strategic Management, Amita Mital, Tata Mc Graw Hill.
 13. Cases in Strategic Management, Budhiraja, Tata Mc Graw Hill.
- Business policy & Strategic Management, Nair, Banerjee & Agarwal, Pragati prakashan

OPERATIONS AND PRODUCTION MANAGEMENT

Course/Paper: 09BMD102

B.TECH+B TECH+MBA Semester-IX

Objective:

The Course is designed to acquaint the students with decision making in: Planning, scheduling and control of Production and Operation functions in both manufacturing and services; Productivity improvement in operations thought layout engineering and quality management etc; Effective and efficient flow, replenishment and control of materials with reference to both manufacturing and services organizations.

Section-A

Operation Management-Introduction. Operation Research and operation strategy, forecasting demand and Linear regression, transportation and assignment problems, allocation of resources.

Nature and Scope of Production Management- process planning and design Facility Location; Types Manufacturing Systems & Layouts; Layout Planning and Analysis Material Handling- Principals-Equipments, Line Balancing-Problems Operations decisions-Production Planning and Control -In Mass Production in Batch/Job Order Manufacturing.

Capacity Planning -Models, Process Planning-Aggregate Planning-Scheduling Maintenance Management Concepts-Work Study, Method Study, Work Measurement, Work Sampling Work Environment-Industrial Safety; Computer aided Manufacturing (CAM), Artificial Intelligence & expert systems.

Material Management -an Overview, production control, storage and retrieval System. Inventory Control-JIT. Network Techniques-Simulation Concept of total Quality (TQ). International Quality Certification and other standards and their applicability in design manufacturing Humanistic and Marketing Aspects of TQ. Total Quality of services. Total Quality and safety. ERP and Business process engineering maintenance Management, project management-PERT & CPM.

Section-B

Case study.

References:

1. Operation Research : Introduction, Taha,Handy A, Delhi, Pearson Education
2. Operation Research - Theory & Applications, J.K.Sharma, Macmillian India Ltd. N.D
3. Production & operation management, S.N.Chary, TMH
4. Production & operation management, Ranjit Singh, Jaipur Publishing.
5. Operation & production Management, K. Aswathapa, Himalaya publication.
6. Operation Research, S.D. Sharma, Kedar Nath & Ram Nath.
7. Production & Operation Management, Nair, Banerjee & Agarwal., Pragati prakashan.

RESEARCH METHODS IN MANAGEMENT

Course/Paper: 09BMD103

B.TECH+B TECH+MBA Semester-IX

Objective:

The objective of the course is to enable the students, in developing the most appropriate Methodology for their research studies and to make familiar with the art of using different research methods and techniques. To understand the concept and process of Business research in business environment. To know the use of tools and techniques for exploratory, conclusive and causal research. To understand the concept of measurement in empirical systems & its validity and reliability. To use statistical Techniques for analysis of research data. To realize the applications of Business research

Section –A

Concept of Scientific Enquiry - Formulation of Research Problem Hypothesis Building

Characteristic and Testing, Review of Literature, Research Design-Exploratory, Descriptive and Experimental research Design. Qualitative Research Design. Data Collection -Sources, Constructing a questionnaire. The Interview, Observation and Survey. Sampling Decisions, Probability and Sampling.

Parametric and Nonparametric test, level of Significance, using software for analysis Grouping and displaying data to convey meaning: Tables and Graphs, measures of Central tendency and dispersion in frequency distributions, Probability distributions, and Testing hypotheses One sample test and two sample tests, chi-square and analysis of variance, Simple regression and correlation, Non-Parametric methods - the sign test for paired data, the rank sums test. The mann-whitney U test, the one sample Runs test, rank correlation.

Attitude Measurement- Motivational Research, Focus Group; Scaling Techniques- Socio Metric and Rating Scale, Scalograms, Internal Consistency Scales. Report Writing Organization Presentation, Bibliography and References.

Section-B

Cases and Problems.

References:

1. Business Research Method, Cooper Schindler, TMH
2. Research Methodology, C.R.Khothari, New Age Publisher
3. Marketing Research, Beri, TMH
4. Research Methods, Susmit Jain.
5. Marketing Research – Text & Cases, Nargundkar, TMH.
6. Marketing Research within a changing, Hair, TMH.
7. Research Methods For Business: A Skill Building Approach, Sekaran, Wiley, India.

14. .

SUMMER TRAINING PROJECT REPORT

(COMPULSORY MAJOR PAPER I)

**Course/Paper: 09BMD104
B.TECH+B TECH+MBA Semester-IX**

Objective:

The summer training project report will be evaluated on internal and external basis. Evaluation and presentation of the report will be done by internal and external Examiners. The student will submit written report and make an oral presentation before a panel of internal examiner (Director/principal of the institute or his or her nominee) and external examiner (to be appointed by director/principal of the institute from a panel proposed by the board of studies and approved by the vice chancellor of BU.) The assessment of the report and its presentation will be jointly done by the internal and external examiner.

GROUP A - FINANCE

INTERNATIONAL FINANCIAL MANAGEMENT

**Course/Paper:09BMD105
B.TECH+B TECH+MBA Semester-IX**

Objective:

The new economic environment has changed the total concept of business in the country. Financial markets of the world are increasingly integrating. Financial opportunities have increased manifold across markets. Almost all products and services face global competition. To introduce the environment of international finance and its implications on international business. To explore the sources of long term finance and design financial strategies. To integrate the global developments with the changing business environment in India.

Section A

International financial management: Genesis international flow of funds. Developments in international monetary system, Emergence of multinational financial management.
Balance of payment. Risk: political and country risk. Raising capital: Domestic & International Introduction of Financial Management: Functions, Profit V/S Wealth Principle, Foreign Direct Investment.
Parity conditions in International Finance- Purchasing Power Parity, Covered Interest Parity, Real Interest Parity, Parity Conditions and Managerial Implications. Analysis of International Capital Budgeting, Cost of Capital of a Foreign Investment, International financing and investment strategies, managing short term assets and liabilities. Country Risk Analysis.

Section B

Case and Problems

References:

1. Multinational Financial Management, Shapiro, PHI N.D.
2. International Financial management, Madhu vij, Excel books, N.D.
3. International Finance, Thomas J. O'Brien.
4. International Financial Management, Apte, Tata Mc Graw Hill.
5. International Financial Management, Eun, Tata McGraw Hill.

GROUP B - MARKETING

INTERNATIONAL MARKETING

Course/Paper:**09BMD106**

B.TECH+B TECH+MBA Semester-IX

Objectives:

To develop an integrated understanding of International marketing aspects for devising and implementing Global Marketing Strategies.

Section A

An Overview to International Business and Trade Theories - Introduction to Marketing Communication, Free Trade v/s Protection, Classical, Modern Theories, Gain and Terms of Trade.

International Business Management - The Economic Environment, Social & Cultural, Political Legal and Regulatory Environment, Competitive Advantage in Global Environment, Market Entry Expansion and Partnership.

International Finance & Institutional Systems - Foreign exchange, Balance of payments, Importing and Exporting, Trade Blocks, International Monetary Fund & World Bank, The Triad and other manner.

Strategic issue for international Marketing - Marketing Information System & Research, Segmentation, Targeting & Positioning, Planning process.

International Marketing Mix Elements - Product Decisions, Pricing Decisions, Marketing channel & place Decision Promotion decisions, Organizing & Controlling.

Section B

Case and Problems

References:

1. International Marketing, Yuvraj
2. International marketing, Kothari, Jain, Rbd.
3. International Marketing, Cateora, Tata Mc Graw Hill.
4. Global Marketing, Johansson, Tata Mc Graw Hill.
5. International Marketing, Paul, Tata Mc Graw Hill.

GROUP C - HUMAN RESOURCE MANAGEMENT

STRATEGIC HUMAN RESOURCE MANAGEMENT

Course/Paper:**09BMD107**

B.TECH+B TECH+MBA Semester-IX

Objectives:

The purpose of this course is to Understand Strategic HRM, Aligning HR systems with business strategy, Strategy formulation, Strategies for performance and development with knowledge of global economy factors. The score card approach is also gaining its importance.

Section A

Understanding Strategic HRM: Traditional vs. strategic HR, Typology of HR activities, “best fit” approach vs. “best practice” approach, HR strategy and the role of national context, and organizational context on HR strategy and practices, investment perspective of human resources.

Aligning HR systems with business strategy: Sustained competitive advantage - how HR adds value to the firm - HR as scarce resource – non-substitutable resource, linking HRM practices to organizational outcomes – assessing and reducing costs – behavioral impact of HR practices –linking strategy to HRM practices – corporate HR philosophy and company wide HR standards – HRM leading strategy formulation.

HR Strategy in work force utilization: Efficient utilization of human resource – cross training and flexible work assignment – work teams – non unionization, strategies for employee shortages, strategies for employee surpluses. Strategies for performance and development: Typology of performance types – marginal performers – under achievers – stars – solid citizens, managing employee ability – recruitment and selection strategy typology, incentive alignment, psychological contracting.

Evaluating HR Function: Overview of evaluation – scope – strategic impact – level of analysis – criteria – level of constituents – ethical dimensions, quantitative and qualitative measures – out come and process criteria, balanced score card perspective, bench marking, accounting for HRM – purpose of measuring cost and benefits of HRM – approaches to HRM performances – employee wastage and turn over rates – cost of absenteeism – measuring human resource cost.

Section B

Case and Problem

References:

1. Strategic Human Resource Management, Rajiv Lochandhar, Excel books, N.D.
2. Human Resource Strategy A Behavioral perspective for the general Manager, George Dreher, Thomas w Dougherty. Tata Mc Graw Hill.
3. Human Resource Strategy, James W Walker, Tata Mc Graw Hill.
4. Human Resource strategy, Dreher, Tata Mc Graw Hill.
5. Strategic Human Resource: Frameworks for general managers, Baron,Wiley India.
6. Strategic Human Resource management, Schuler, Wiley India.

GROUP A - FINANCE

INVESTMENT MANAGEMENT & SECURITY ANALYSIS

Course/Paper: 09BMD108

B.TECH+B TECH+MBA Semester-IX

Objective:

The focus of Security Analysis is on how others analyze your company's securities on their own. Whereas, that of Portfolio Management is on how investors analyze your company's securities in comparison with other's on the security market. The course is designed with a view: _To acquaint the students with the working of security market and principles of security analysis; and _To develop the skills required for portfolio management so as to be able to judge the competitive position of firms in capital market and review the related business decisions.

Section A

The Role of Security Markets in Economy. The Organization and Mechanics of Indian Security Markets- Various Securities and their Characteristics, Objective of the Security Analysis, functions of an Organized Security Market, Mechanics of Security Trading.

Various Types of Security Markets and their Functions- Stock Exchanges, Depository. Role of SEBI with regard to Secondary Markets. Capital asset pricing model, arbitrage pricing theory, efficient market

hypothesis, technical and fundamental analysis. Concept and trends of savings and investment in India. Stock market: concept, functions, regulations, working and reforms. Instruments of mobilizing investment: Types and characteristics. Comparison of investment options. IPO and secondary markets: reforms and trends, trading mechanism: on line trading, settlement period. Transaction cost in secondary markets, clearing settlement and depositories, integration of stock exchange and consolidation of intermediaries, listing requirements.

Section B

Case and Problems

References:

1. Investment Management & portfolio management, V.K. Bhalla,
2. Security Analysis & portfolio Mgmt., Punithavan Pandian
3. Security Analysis & Investment Management M.R.Agarwal, Garima Publication.
4. Investment Managemnet, Aswathappa, Himalaya Publication.
5. Investment : An Indian Perspective, Bodie & Mohanty
6. Investment : Analysis & Behaviour, Hirschey, Tata McGraw Hill.

GROUP B - MARKETING

ADVERTISING MANAGEMENT

Course/Paper: 09BMD109

B.TECH+B TECH+MBA Semester-IX

Objectives:

The objective of this course is to develop the understanding about the marketing communication tools and implement them in designing Advertisement strategies.

Section A

Introduction of Marketing Communication-Overview of marketing communication, Factors affecting the marketing communication mix, Integrated Marketing Communication, Ethical issues in marketing communication. Marketing Communication Planning-Models of marketing communication, Developing & control of marketing communication, marketing communication-planning procedure. Advertising objectives and planning - Meaning Definition and objectives of Advertising, Types of advertising, The advertising agency: Function & types, Advertising Agency compensation Creative strategy - Target market & creative objective, advertising Appeals, Creative format & creation stage, Copy testing and diagnosis.

Media planning & promotion - Environment analysis media object, Media strategy & media planning modes, Indoor media, out door media, Measuring Advertisement Performances, Current developments in advertising.

Section B

Case and Problems

References:

1. Advertisement Management, Batra & others, PHI N.D.
2. Advertisement Management(In Indian Perspective), P.K.Agarwal, Pragati Prakashan.
3. Advertising Sales Promotion & CRM , P.K.Agarwal, Pragati Prakashan.
4. Advertisement Management: Concepts & Cases, Mohan, Tata Mc Graw Hill.
5. Advertising & Promotion, Belch, Tata McGraw Hill.

GROUP C - HUMAN RESOURCE MANAGEMENT

TRAINING AND DEVELOPMENT

Course/Paper: 09BMD110
B.TECH+B TECH+MBA Semester-IX

Objective:

The Purpose of this paper is to provide an in-depth understanding of the role of training in the HRD and to enable the course participants to manage the Training system and processes.

Section A

Introduction to Training & Development - Training and Training needs Assessment, Training Design and Administration, Training methods, Technique & Aids, Training Strategy Performance Appraisal & Training - Learning through training, Adult Learning (Andragogy), Learning theories and learning Curve, Learning Styles

Training Process: An Overview; Role Responsibility and Challenges to Training Managers; Organization and Management of Training Function; Training Needs Assessment and Action Research; Instruction Objectives and Lesson Planning; Learning Process; Training Climate and Pedagogy; Developing Training Modules.

Trainer & Training Institutions - Trainers Profile, Types of Training Institutions, Trainer as a change Agent, MDP.

Evaluation of Training - Training evaluation & ROI, Trainer of Training, Measurement Tools & Technique, Feedback Mechanism Training Methods and Techniques: Facilities Planning and Training Aids; Organizing the training Department, controlling training, Training Communication; Training Evaluation; Training and Development in India.

Section –B

Case Study.

References:

1. Training Instruments for HRD & O.D., Udai Pareek, Tata Mc Graw Hill.
2. Employee Training & Development, Raymond A Noe, The Ohio State University, Tata Mc Graw Hill.
3. Training in Practise, Stephen Truelove, Tata Mc Graw Hill.
4. Employee Training & Development, Noe, Tata McGrawHill
5. Training & Development, Janakiram, Wiley India.

X SEMESTER

SOCIAL RESPONSIBILITY & BUSINESS EHICS & LAW

Course/Paper: 10BMD101
B.TECH+B TECH+MBA Semester-X

Objective:

This course aims at helping students think about some of the important ethical Implications of the day-to-day happenings and practices of Indian industry and business. It is designed to stimulate discussion and debate rather than to formulate principles, and to raise further questions rather than to dictate answers.

The following objectives are underlined: To improve ethical reasoning by correlating moral concepts to business practices - clarification of the values that determine managerial behavior To sensitize the fundamental human values in analyzing social problems and appraising global issues. To recognize the variables in most ethically complex business situations through an understanding of the more subtle criteria for making sound decisions.

Section- A

The Concept: The dream of an Indian Style of Management, Abiding Values is Universal, Individualistic: Rational Brain Vs Holistic-Spiritual Brain. Total Quality Mind for Total Quality Management: The Imperative of Human Values. Group Ethics- Ethical Attitudes of Indian Managers, Managers Facing Unethical Management,

Ethics & the Organization: Unity: The Basis of Ethics, Science & Ethics, Technology & Ethics, Business Ethics, Normative Ethics, Managing Ethics, Cooperative Ethics, Indian Ethos for Management.

Relevance of Gita to Modern Management.

Business Law

Indian Contract Act, 1872-Essential Elements of Contract, Void Agreements; Breach of Contracts & Remedies, Amendments. Negotiable Instruments. Act, 1881-Promissory Notes, Cheques, Bills of Exchange Sale of Goods Act, 1930-Contract of Sale, Transfer of Property; Sale by Non-Owner, Performance of Contract. Indian Company's Act, 1956-Meaning and Nature of Company, Kinds of companies, Registration and Incorporation, Share and Share Capital.

Section –B

Case study

References:

15. Business Ethics & indian ethos, Dr. G.N. Purohit Dr. Gaurav Bissa, Ajmera Book depot.
16. Business Law & regulatory framework, Dr. S.S.Chawhan & Mohit Sharma, ABD..
17. Business law, Dr. R.L.Nolakha, Ramesh Bk Depot
18. Company law, S.S.Gulshan, Excel Books.
19. Business Ethics, Ronald D Francis, Mukti Mishra, Tata Mc graw Hill.
20. Perspectives of Business Ethics, Laura Hartman & Abha Chatterjee. , Tata Mc graw Hill.
21. An Introduction to Business Ethics, Joseph Des Jardins, Tata Mc Graw Hill.
22. Indian Ethos & Values of Managers, Khandelwal N.M., Pragati Prakashan

Project Management

Course/Paper: 10BMD102

B.TECH+B TECH+MBA Semester-X

GROUP A – FINANCE

MANAGEMENT OF FINANCIAL SERVICES

Course/Paper: 10BMD103

B.TECH+B TECH+MBA Semester-X

Objective:

In The Fast Changing Scenario of the Indian Economy, With Deregulation, Competition, Free Market Orientation, And Globalization flows And Outflows of Funds Increased and the FFIs and FIIs have started operations in the Indian financial markets. This course shall enable the student to look into the various perspectives and understand the importance.

Section A

Introduction to financial services marketing: Concept of financial services, financial services and GDP, reforms in financial sector, recent issues and challenges in financial services in India. Indian financial system: an overview of Indian financial institutions, types of financial services – fund and fee based. An overview of the different activities performed by a bank. Risk in financial services and changing perception of intermediaries regarding financial services.

Capital markets: government securities market, monetary money market.

Merchant banking: nature and scope, regulation, overview of current Indian merchant banking scene-structure of merchant banking industry, primary market in India and abroad, SEBI guidelines, pricing and timing of public issues, pre-issue management-advertising and marketing, post issue management-rights issues.

Introductory, conceptual, evaluation, marketing and legal aspects of the following financial services: Lease, Hire purchase, consumer finance, factoring, bill financing, credit cards.

Section B

Case and Problems

ReferencEs:

1. Financial Markets & Services, Gorden Natrajen, Himalaya Publication
2. Marketing of Fianacial Services, jain rathi thakur solanki, RBD, jaipur.
3. Financial Services, tripathy, PHI.
4. Financial Institutions & markets, kohn, oxford.
5. Financial markets & financial services, vasant desai, Himalaya publication.

GROUP B - MARKETING

SALES & DISTRIBUTION MANAGEMENT

Course/Paper: 10BMD104

B.TECH+B TECH+MBA Semester-X

Objectives:

To provide an understanding of the concepts, attitudes, techniques and approaches required for effective decision making in the areas of Sales and Distribution. To pay special emphasis on the practicing manager's problems and dilemmas. To develop skills critical for generating, evaluating and selecting sales and distribution strategies.

Section A

The Sales Management - Introduction to sales management and sales organization, Sales function & policies, Personal selling - nature, scope & objectives, Formulating Personal selling strategy.

Planning the Sales Effort - Sales planning and Budgeting, Estimating Market Potential and Sales forecasting, Setting the sales territory & quotas, Sales and cost Analysis.

Organizing and Directing the sales Force - Recurring and training sales personnel, Designing & compensating sales Personnel, Motivating and Leading the sales force, Evaluating sales force performance.

Distribution Management - Managing marketing logistics & channels, Channel Integration - VMS, HMS, Channel Management, and Marketing channel Policies & legal issue.

Channel Institutions & control, Wholesaling &- Retailing, Channel Information systems, Managing & Evaluating Channel Performance Case & future trends in sales & distribution management.

Section B

Case and Problems

References:

1. Sales Management, Still & Cundiff, Pearson Pentrice Hall.
2. Sales & Distribution Management, Hawalder, TMH.
3. Sales & Distribution Management,Panda.
4. Sales & Distribution Management, G.S. Sudha. RBD.
5. Sales & Distribution Management, Nair, Banerjee & Agarwal, Pragati Prakashan.

6. Sales & Distribution Management, P.K.Agarwal, Pragati Prakashan.

GROUP C - HUMAN RESOURCE MANAGEMENT

LEADERSHIP SKILLS AND CHANGE MANAGEMENT

Course/Paper: 10BMD105

B.TECH+B TECH+MBA Semester-X

Objectives:

The course will let the student understand the impact and importance of becoming a leader, effective leadership behaviour and styles. Understanding the change, its role and implementation

Section A

The nature and importance of leadership: The meaning of leadership – leadership as a partnership – leadership vs. management – the Impact of leadership on organizational performance – leadership roles – the satisfactions and frustrations of being a leader. Traits, Motives, and characteristics of leaders: Personality traits of effective leaders' leadership motives-cognitive factors and leadership.

Effective leadership behaviour and attitudes: task-related attitudes and behaviours – relationship-oriented attitudes and behaviours – super leadership: leading others to lead themselves – 360-degree feedback for fine-tuning leadership approach.

Leadership styles: the leadership continuum: classical leadership styles – the boss-centered vs. employee-centered leadership continuum – the autocratic participative free rein continuum- the leadership grid styles – the entrepreneurial leadership style – gender differences in leadership style – selecting the best leadership style.

Understanding change: nature of change – forces of change – perspective on change: contingency perspective – population ecology perspective institutional perspective – resource-dependence perspective

Types of change: continuous change – discontinuous change – participative change – directive change. Implementing change: assemble a change management team – establish a new direction for change – prepare the organization for change ,systems and resources to support change – identify and to remove road blocks to change – absorb change into the culture of the organization

Section B

Case and Problems

References:

1. Leadership: Enhancing The Lessons of Experience, Richard L Hugues, Robert c Ginnette, Gordon J Curphy, Tata McGraw Hill.
2. Leaders & the leadership process, Jon Pierce & John Newstorm, Tata McGraw Hill.
3. Art of Leadership, George Manning, Kent Curtis, Tata McGraw Hill.
4. Leadership, Hughes, tata Mc Graw Hill
5. Leadership Research Findings, Practise & Skills, DuBrin, Wiley India.
6. Practising Leadership Principles & Applications, Shriberg, Wiley, India.

GROUP A – FINANCE

FINANCE FOR STRATEGIC DECISIONS

Course/Paper: 10BMD106

B.TECH+B TECH+MBA Semester-X

Objective:

The modern industrial or service firm must conduct its business in a rapidly changing and highly competitive environment. A premium is placed on the ability to react quickly and correctly to constantly changing market conditions. The objective of the course is to make student aware of the strategic decisions to be undertaken to familiarize with finance function.

Section A

An Overview of the Financial System- Saving and Investment, Money, Inflation & Interest, Banking and Non Banking Financial Intermediaries.

Financial Markets and Instruments- Money market and Capital Markets, Financial Instruments: REPO, Equities, Bonds, Derivatives etc. Characteristics of Financial Instruments:

Central Banking, Monetary Policy & Regulation- The RBI as a Central Bank: Structure, Functions and Working, Reforms, the Current Regulatory Structure. Concept of strategic decisions-changing global economic environment. Theory of Merger & Acquisition. Strategic decisions regarding securitization factoring and forfeiting,

Section B

Case and Problems

References:

1. Finance for Strategic Decision, Jain & Rathi, RBD.
2. Financial Markets & Corporate Strategy, Grinblatt, Tata McGraw Hill.
3. Capital Markets, GuruSamy, TataMc Graw Hill.
4. Financial Services, Guruswamy, Tata McGraw Hill.

GROUP B - MARKETING

PRODUCT & BRAND MANAGEMENT

Course/Paper: 10BMD107

B.TECH+B TECH+MBA Semester-X

Objectives:

To help the students appreciate the relationship between Corporate Strategy and Product and Brand Management. To equip the students with the various dimensions of product management such as product-line decisions, product platform and product life cycle. To provide a framework to understand the new product development process, the organizational structures for new product development and product management functions within an organization-To explore the various issues related to Brand Management and to enhance the understanding and appreciation of this important intangible strategic asset including brand associations, brand identity, brand architecture, leveraging brand assets, brand portfolio management etc.

Section A

Introduction to Product Management - What is Product & Product - Service Continuum, Individual Product Decisions, Product attributes, Product and product Lives, Special issues in Product Management - Product Life cycle & Strategy, Product Differentiation, New Product development.

Introduction to Brand Management and Crafting of Brand Elements. Consumer Brand Knowledge. Brand Identity, Personality and Brand Associations. Managing Brand Architecture and Brand Portfolios. Corporate Branding and Tools for Building Brand Equity. Leveraging Brand Equity. Measurement of Brand Equity.

Brand as a Concept - Value & Significance of Brand, Brand Name, Symbol & Slogan, Brand Strategic Decision, Line Expensing & Brand Extension

Concept of Brand Equity & Association - Brand Loyalty; Awareness, Creating and Managing Brand Equity, Selecting, Creating and Maintain Associate.

Brand Strategic - Brand Rejuvenation, Brand Relations, Brand Proliferation, Multi Branding, Global Brand.

Section B

Case and Problems

References:

1. Managing Indian Brands, Ramesh Kumar, Vikas Pub. N.D.
2. Product & Brand Management, Sharma Pareek, Ramesh Book Depot.
3. Product Development & Design, tarun soota, Pragati Prakashan.
4. Product Management, Anandan, Tata Mc Graw Hill.

5. Product Management, Lehmann, tata mc graw hill.
6. Product Design & Development, Ulrich, Tata Mc Graw Hill.

GROUP C - HUMAN RESOURCE MANAGEMENT

HUMAN RESOURCE PLANNING

Course/Paper: 10BMD108
B.TECH+B TECH+MBA Semester-X

Objectives:

To understand the purpose, process and applications of human resource planning in the context of different organizational strategies. To create a critical appreciation and knowledge of understanding the determinants of human resource requirements. And the means for meeting those requirements. To create practical awareness about the current trends in human resource planning in global companies.

Section A

Introduction: definition and concept of HRP, benefits, process. HRP components.

HR planning and corporate strategies: HR planning as a strategic process-employees as resources-goal attainment, linking HR process to strategy, involvement in strategic planning process, strategic HR Planning model, staffing system.

Job analysis: meaning and definition, job analysis process, techniques of job analysis, methods and practice of job analysis, competency based approach.

HR Forecasting: Forecasting Manpower Needs, the Forecasting Process, Inventorying available talent, Projecting Future Talent Supply, forecasting Staffing Requirements. Index analysis-expert forecasts-delphi technique-nominal group technique-HR budget and staffing table, scenario forecasting, regression analysis.

Career planning and succession management: definitions, concepts, stages of career development process and organizational HR Policies, career processes Succession management process and Management development programmes, objectives of MDP's, Job rotation, Auditing MDP's management development methods, challenges of succession management, Replacement analysis.

Section B

Case and Problems

GROUP A – FINANCE

BANKING SERVICES & OPERATION

Course/Paper: 10BMD109
B.TECH+B TECH+MBA Semester-X

Objective:

The objective of the course is to develop the skills required for understanding India's most challenging and important financial services sector. Banking services operation will enable the management student to have an insight to the banking sector and how it works.

Section A

Indian financial system: the financial system – nature – evolution and structure – the functions of financial intermediaries – financial instruments – the role of financial system in economic development the Indian financial system.

Deposit products: types of bank deposits, deposit schemes, composition of bank deposits. Credit policy: Need for credit policy, credit policy components of credit policy, credit policy pursued by the government.

Retail banking: basics of retail banking, forms of retail banking. Corporate banking: The nature of corporate banking, loan syndication.

Rural banking and Micro finance: sources of rural finance, credit delivery mechanism in rural finance to co-operative agricultural and rural development banks (CARDB) – regional rural banks (RRBS), service area approach (SAA) – National Bank for Agriculture and Rural Development (NABARD), microfinance. Fee-based services: the fee-based services of banks, letter of credits, bank guarantees. Introduction to banking operations: Importance of customer relationship management in banks – different types of products and services offered to customers – role of technology in banking operations Introduction to electronic banking.

Section B

Case and Problems

References:

1. Banking Service & Operation, Jain & Rathi Sharma, RBD, Jaipur.
2. Banking theory Law & Practise, Gurusamy, Tata Mc Graw Hill.
3. Merchant Banking & Financial services, Gurusamy, Tata Mcgraw Hill.
4. Banking & Financial System, B.L.Ojha, Ajmera Book Company.
5. Financial Services, M.Y.Khan, Tata Mc Graw Hill.

GROUP B - MARKETING

MARKETING OF SERVICES

Course/Paper: 10BMD110

B.TECH+B TECH+MBA Semester-X

Objectives:

Planning and implementing the marketing strategy for service products requires a different sort of approach, which is different from the traditional goods marketing. The objective of this course is to acquaint the students to the uniqueness of the services characteristics and its marketing implications. The intent of the course is to discuss measure and analyze several facets in the area of services marketing essential for the success of a service sector firm.

Section A

Introduction to Service Marketing - Understanding Service, The Nature of Service Marketing, Classification of service. Service Consumer Behavior - Understanding Consumer Behaviors, Customer expectations & perceptions, managing & exceeding customer service exportations, Strategic for influencing customer perception.

Strategic Issues in Services Marketing - Market Segmentation & Targeting; Individualized Service and Mass Customization, Differentiation and Positioning of Services; Steps in developing a positioning strategy, Developing and maintaining demand & capacity.

The marketing mix and services - The marketing mix dements, Traditional marketing mix -Product, price place, promotion & communication services, extended marketing mix – people, process physical evidence in services.

Challenges of service marketing - Developing & managing the customer service function, Marketing planning for service; Developing & maintain quality ill services, Relationship marketing, Service marketing - specific Industries, Tourism, Travel, Transportation service marketing, financial services; Education & Professional service, Telecom & Courier, Media Service.

Section B

Case and Problems

References:

1. Service marketing, Lovelock, Pearson Education N.D.
2. Services Marketing: Text & Cases, Nargundkar, Tata Mc Graw Hill.
3. Service Marketing, Zeithaml, Tata Mc Graw Hill.

GROUP C - HUMAN RESOURCE MANAGEMENT

PERFORMANCE MANAGEMENT & RETENTION STRATEGIES

Course/Paper: 10BMD111
B.TECH+B TECH+MBA Semester-X

Objectives:

The objective of this paper is to introduce the basic concept of performance management and to widen the knowledge of the students in selecting and implementing the various performance measurement methods for better designing of reward system associated with it.

Section A

Performance Appraisal – A Conceptual Framework, Concept & Definitions of performance appraisal, and Objectives of performance appraisal: Process of performance appraisal, Performance Appraisal v/s Performance Management System, Concept of performance management, Process & elements Of performance management.

Behavioral Performance Management - Learning Theories; Principles of Learning: Reinforcement and Punishment, Role of Organizational Reward Systems, Behavioral Performance Management or OB Mod. Potential Appraisal & HRD - Meaning & objectives of Potential Appraisal, Potential Appraisal & Performance Appraisal, Concept of HRD; Objectives and challenges of HRD Mechanisms and HRD outcomes.

Performance Planning & Measuring Performance - Meaning & need or Performance Planning, Planning Individual Performance, Principles of Measurement.; Classification of Performance Measures, Measurement issues; Approaches & tools to measure organizational performance, Traditional and modern performance appraisal methods

Competency Analysis and Competency Mapping - Meaning of competency, Competency Analysis and Approaches to competency Analysis, Competency mapping; Need development and assessment of competency models, Competency and performance, Tools to identify the competencies of the employees.

Section B

Case and Problems

References:

1. Performance management, Dixit Varsha, Vrinda Publication.
2. Performance Appraisal & Compensation Management: A Modern Approach, Goel, PHI.