

SCHEME OF INSTRUCTION AND EXAMINATION
FOUR YEAR B.TECH. DEGREE COURSE
(Effective from 2006-07)
(Common to CSE & ECE Branches)

FIRST YEAR

Sl. No	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ. Exam	Sessional Exam	Total
	Theory								
1.	Professional Communication in English	PCE	2	-	-	3	70	30	100
2.	Computer Programming	CP	3	-	-	3	70	30	100
3.	Engineering Mathematics – I	EM1	2	1	-	3	70	30	100
4.	Engineering Mathematics – II	EM2	2	1	-	3	70	30	100
5	Engineering Physics & Chemistry	EPC	3	-	-	3	70	30	100
6.	Network Theory	NT	3	1	-	3	70	30	100
7.	Electronic Devices & Circuits	EDC	3	1	-	3	70	30	100
	Practical								
8.	Engineering Drawing Practice Lab	EDP	1	3	-	3	50	25	75
9.	Phonetics & Communication Skills Lab	PCP	-	-	2	2	50	25	75
10	Computer Programming Lab	CPP	-	-	3	3	50	25	75
11	Electronic Devices & Circuits Lab	EDC P	-	-	3	3	50	25	75
12	Engineering Workshop Practice Lab	EWP	-	-	3	3	50	25	75
			19	7	11		740	335	1075

NOTE: The end examination question paper shall consist of eight questions.
The student shall answer any five questions.

FOUR YEAR B.Tech DEGREE COURSE
Scheme of Instruction and Examination
(Effective for the batches admitted from 2006-07)

II CSE - First Semester

S. No	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ Exam	Sessional Exam	Total
Theory									
1.	Environmental Studies	ESD	4	-	-	3	70	30	100
2.	Object Oriented Programming	OOP	4	1	-	3	70	30	100
3.	Data Structures through C++	DS	4	1	-	3	70	30	100
4.	Switching Theory and Logic Design	STLD	4	1	-	3	70	30	100
5	Discrete Structures & Graph Theory	DSGT	4	1	-	3	70	30	100
6.	File Structures and Data Processing	FSDP	4	1	-	3	70	30	100
Practical									
7	Object Oriented Programming & Data Processing Lab	OOPD P (P)	-	-	3	3	50	25	75
8	Data Structures with C++ Lab	DS (P)	-	-	3	3	50	25	75
Total			24	5	6		520	230	750

L: Lecture periods per week

T/S: Tutorial/ Seminar periods per week

P: Practical / Drawing periods per week

**NOTE: The end examination question paper shall consist of eight questions.
The student shall answer any five questions.**

FOUR YEAR B.Tech DEGREE COURSE
Scheme of Instruction and Examination
(Effective for the batches admitted from 2006-07)

II CSE - Second Semester

S. No	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ. Exam	Sessional Exam	Total
Theory									
1.	Managerial Economics & Principles of Accountancy	MEPA	4	-	-	3	70	30	100
2.	Computer Graphics	CG	4	1	-	3	70	30	100
3.	Computer Organization & Architecture	COA	4	-	-	3	70	30	100
4.	Database Management Systems	DBMS	4	1	-	3	70	30	100
5.	System Analysis and Design	SAD	4	-	-	3	70	30	100
6.	Java Programming	JP	4	1	-	3	70	30	100
Practical									
7.	JAVA & Computer Graphics Lab	JCG (P)	-	-	3	3	50	25	75
8.	DBMS Lab	DBMS (P)	-	-	3	3	50	25	75
Total			24	3	6	-	520	230	750

L: Lecture periods per week

T/S: Tutorial/ Seminar periods per week

P: Practical / Drawing periods per week

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The student shall answer any five questions.**

FOUR YEAR B.Tech DEGREE COURSE
Scheme of Instruction and Examination

(Effective for the batches admitted from 2006-07)

III CSE - First Semester

Sl. No.	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ. Exam	Sessional Exam	Total
Theory									
1	Operating System	OS	4	1	-	3	70	30	100
2	Advanced Unix Programming	AUP	4	1	-	3	70	30	100
3	Theory of Computation	TC	4	1	-	3	70	30	100
4	Software Engineering	SE	4	1	-	3	70	30	100
5	Visual Programming Techniques	VPT	4	1	-	3	70	30	100
6	Data Communication	DC	4	1	-	3	70	30	100
Practical									
7	Operating Systems & Unix Lab	OSU (P)	-	-	3	3	50	25	75
8	Visual Programming Techniques Lab	VPT (P)	-	-	3	3	50	25	75
Total			24	6	6	-	520	230	750

L: Lecture periods per week

T/S: Tutorial/ Seminar periods per week

P: Practical / Drawing periods per week

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The student shall answer any five questions.**

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Scheme of Instruction and Examination
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III CSE - Second Semester

Sl. No.	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ. Exam	Sessional Exam	Total
	Theory								
1	Computer Networks	CN	4	1	-	3	70	30	100
2	Language Processors	LP	4	1	-	3	70	30	100
3	Principles of Programming Languages	PPL	4	1	-	3	70	30	100
4	Design and Analysis of Algorithms	DAA	4	1	-	3	70	30	100
5	Web Programming	WP	4	1	-	3	70	30	100
6	Microprocessors and Assembly Language Programming	MALP	4	1	-	3	70	30	100
	Practical								
7	Networks and Algorithms Lab	NA (P)	-	-	3	2	50	25	75
8	Language Processors & ALP Lab	LPALP (P)	-	-	3	3	50	25	75
	Total		24	6	6		520	230	750

L: Lecture periods per week

T/S: Tutorial/ Seminar periods per week

P: Practical / Drawing periods per week

NOTE: The end examination question paper shall consist of eight questions. The student shall answer any five questions.

FOUR YEAR B.Tech DEGREE COURSE
Scheme of Instruction and Examination
(Effective for the batches admitted from 2006-07)

IV CSE - First Semester

Sl. No.	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ. Exam	Sessional Exam	Total
Theory									
1	Advanced Computer Architecture	ACA	4	1	-	3	70	30	100
2	Object Oriented Modeling and Design	OOM D	4	1	-	3	70	30	100
3	Data Warehousing & Mining	DWM	4	1	-	3	70	30	100
4	Entrepreneurship Development	ED	4	1		3	70	30	100
5	Elective – I		4	1	-	3	70	30	100
6	Elective – II		4	1	-	3	70	30	100
Practical									
7	Web Programming Lab	WP (P)	-	-	3	3	50	25	75
8	Data Warehousing Lab	DW (P)	-	-	3	4	50	25	75
Total			24	6	6		520	230	750

L: Lecture periods per week

T/S: Tutorial/ Seminar periods per week

P: Practical / Drawing periods per week

**NOTE: The end examination question paper shall consist of eight questions.
The student shall answer any five questions.**

FOUR YEAR B.Tech DEGREE COURSE
Scheme of Instruction and Examination
(Effective for the batches admitted from 2006-07)

IV CSE - Second Semester

Sl. No.	Subject	Abbreviation	Scheme of Instruction periods/week			Duration of Univ. Exam Hours	Scheme of Examination		
			L	D/T	P		Max Marks		
							Univ. Exam	Sessional Exam	Total
Theory									
1	Elective – III		4	-	-	3	70	30	100
2	Elective – IV		4	-	-	3	70	30	100
Practical									
3	Project work	PW	-	-	6	-	150	50	200
Total									
			8	-	6		290	110	400

L: Lecture periods per week

T/S: Tutorial/ Seminar periods per week

P: Practical / Drawing periods per week

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The student shall answer any five questions.**

CSE SYLLABUS

PROFESSIONAL COMMUNICATION IN ENGLISH (PCE) (Common to All Branches of I. B.Tech)

Contact Periods : 2 L/week
University Exam : 3 Hours

Sessional Marks : 30
University Marks : 70

I. **Text** : Selections from "Heritage of English " edited by Devendra Kohli and Harish Trivedi, Published by Macmillan India Ltd., Hyderabad.

Selected Topics

1. A Tea Party : Ruth Praver Jhabvala
2. The Panorama of India's Past : Jawaharlal Nehru
3. English Zindabad Vs Angrezi Hatao : Kushwant Singh
4. Examination : R.K. Narayan
5. Man's War Against Nature : Rachel Carson

Vocabulary Based on the Text Book :

- a. Synonyms
 - b. Antonyms
 - c. Idioms and Verbal Phrases
 - d. One Word Substitutes
 - e. Prefixes and Suffixes
- II Technical Report Writing :
- a. Feasibility Report on the establishment of an industry
 - b. Factual Report

III Composition:

- a. Letter Writing
- b. Resume preparation

IV Grammar :

1. Remedial Grammar (correction of sentences)
2. Word order in English sentences
3. Voices
4. Direct and Indirect Speeches
5. Degrees of comparison
6. Simple, Complex, Compound and Compound-complex sentences

Reference Books :

1. "Practical English Usage" by Michael Swan published by Oxford University Press
2. "English Grammar , Composition and Correspondence" by M.A. Pink and S.E. Thomas Published by S. Chand & Co.,
3. "English for Professional Students" by S.S. Prabhakara Rao.
4. "Effective Technical Communication" by M. Ashraf Rizvi, Published by Tata McGraw-Hill Publishing Company Ltd.

COMPUTER PROGRAMMING (CP)
(Common to All Branches of I B.Tech.)

Contact Periods: 3L / Week
University Exam: 3 Hours.

Sessional Marks: 30
University Marks: 70

Unit –1

Over view of revolution in computers & communications: From the analog to the digital age, Overview of a computer and communications system: people, procedures, Data, information, Hardware - operations of computing, hardware Categories, Software - application software and system software, developments in computer technology, types of programming languages, algorithms, flow charts.

Problem Solving: C fundamentals, Syntax, identifiers and key words, data types, constants and variable declarations, Arithmetic operators, expressions, assignment statements, data input / output, printf, scanf, getchar, putchar, gets, puts.

Unit – 2

Flow Control: Relational, logical operators, conditions and boolean expressions. Selection, if, If else, nested if statements, switch statement, goto statement. Looping, conditional loops, count loops. While, do-while, for loops, break, continue, nested loops, Examples to find terms and sums for series problems.

Unit – 3

Subprograms: Definition of a function, accessing of a function, passing arguments to a function, argument data types, function prototypes. Local and global variable declarations, storage classes- automatic, external, static, register, recursion.

Unit – 4

Arrays: Defining an array, processing an array, passing arrays to a function, multidimensional arrays, character strings and character arrays. Searching-linear search, binary search, Sorting-Selection, bubble, matrix operations.

Pointers : Concept of pointers, Pointer declarations, passing pointers to a function, pointers and one-dimensional arrays, Operations on pointers, pointers and multidimensional arrays of pointers.

Unit – 5

Structures and Unions: Defining a structure, processing a structure, User-defined data types (typedef), structures and pointers, passing structures to a function, self-referential structures, unions.

Data Files: Opening and closing a data file, creating a data file, processing a data file.

Text Books:

1. Programming with C-Byron S. Gottfried (Tata Mc Graw Hill Publications – Schuam Outline Series)
2. Using Information Technology By Sawyer, Williams, and Hutchinson

Reference Book: Programming in C By E. Balaguruswamy (TMH)

ENGINEERING MATHEMATICS – I (EM1)
(Common to CSE & ECE Branches of I B.Tech)

Contact Periods : (2L + 1 T) / Week
University Exam : 3 Hours

Sessional Marks : 30
University Marks : 70

Unit – 1:

Matrix Algebra : Rank of a matrix, Elementary transformations of a matrix, Normal form of a matrix, Linear dependence of Vectors, Consistency of a system of linear equations, Rouche's theorem (statement only). Linear and orthogonal transformations, orthogonal matrix, Eigen values and Eigen Vectors. Properties of eigen values and vectors. Cayley-Hamilton theorem. Complex matrices.

Unit – 2

Partial Differential Equations: Formation of equations by eliminating arbitrary constants and functions, Linear equations of First order, Lagrange's equation. Non-linear equations of First

order. Homogenous linear equations with constant coefficients. Applications to one dimensional wave equation, one dimensional heat flow.

Unit-3

Infinite Series : Convergence and divergence of series. General properties, Series of positive terms, Comparison test, D'Alembert's ratio test, Cauchy's root test, Raabe's test and Logarithmic test (all tests statements only). Alternating series, Leibnitz's rule. Convergence and summation of Binomial, Exponential and Logarithmic series.

Unit – 4

Fourier Series : Euler's formulae, Conditions for a fourier expansion. Dirichlet's conditions. Functions having point of discontinuity. Odd and even functions. Change of interval, Half range series, Parseval's formula. Practical harmonic analysis.

Unit – 5

Vector Calculus : Scalar and Vector point functions. Gradient, Divergence and Curl of vectors. Irrotational and Solenoidal fields. Green's theorem, Stoke's theorem, Gauss-Divergence theorem and applications.

Text Books :

1. Advance Engg. Mathematics - E. Kreyszig (Wiley-Eastern Ltd)
2. Engg. Mathematics Series – M.K. Venkataraman (National Pub. Co.)

Reference Books:

1. Higher Engg. Mathematics – B.S. Grewal (Khanna Publishers)
2. Engineering Mathematics -- N.P. Bali and others (Lakshmi Publishers)
- 3.

ENGINEERING MATHEMATICS – II (EM2) **(Common to CSE & ECE Branches of I B.Tech)**

Contact Periods : (2L + 1 T) / Week

Sessional Marks : 30

University Exam : 3 Hours

University Marks : 70

Unit – 1 :

Ordinary Differential Equations : Solutions of first order and first degree equations-Homogenous and Non-homogeneous equations. Linear equations, Bernoulli's equations, Exact and reducible to exact equations. Linear Differential Equations of higher order with constant coefficients. Applications to electrical circuits.

Unit – 2:

Laplace Transforms : Definition, Transforms of elementary functions. Properties of Laplace transforms, Transforms of derivatives and integrals, multiplication by t^n and division by t . Periodic functions, second shifting theorem. Inverse Laplace transforms. Convolution theorem. Solutions of ordinary differential equations by transform techniques.

Unit – 3 :

Numerical Methods : Solutions of algebraic and transcendental equations-method of False position. Newton-Raphson method, Iteration method. Solution of simultaneous linear equations—Gauss elimination method, Gauss-Seidal method, Gauss-Crout's method. Finite differences, operators. $E, \Delta, \nabla, \delta$ & μ . Relations between the operators. Newton's interpolation formulae, Lagrange's interpolation formula. Inverse Lagranges interpolation formula.

Unit- 4 :

Multiple Integrals : Double integrals. Change of order of integration. Double integrals in polar coordinates. Change to polar coordinates. Triple integrals (Cartesian and polar only). Applications of multiple integrals – Areas enclosed by curves and volumes of solids. Gamma function, Beta function. Value of $\Gamma(1/2)$. Relation between Beta and Gamma functions.

Unit – 5 :

Statistical Methods : Simple correlation. Lines of regression. Rank correlation. Normal test-Test for single proportion, difference of proportions, single mean and difference of means, Student's t-distribution, t-test, test for single mean and difference of means, Chi-square test.

Text Books :

1. Advance Engg. Mathematics - E. Kreyszig (Wiley-Eastern Ltd)
2. Engg. Mathematics Series – M.K. Venkataraman (National Pub. Co.)

Reference Books:

1. Higher Engg. Mathematics – B.S. Grewal (Khanna Publishers)
2. Engineering Mathematics -- N.P. Bali and others (Lakshmi Publishers)

ENGINEERING PHYSICS AND CHEMISTRY (EPC)
(Common to CSE & ECE Branches of I B.Tech)

Contact Periods : 3 periods/week
University Exam : 3 Hours

Sessional Marks : 30
University Marks : 70

Part-A Engineering Physics

Lectures: 2 Periods/week

Sessional Marks : 18
University Marks : 42

Unit-1:

Oscillations : Free, Damped and Forced Vibrations Equation of motion and solution, Resonance, Effect of damping on resonance , Applications to electromagnetic oscillators LC and LCR circuits

Ultrasonics : Introduction, Production of ultrasonic waves, Magnetostriction method and Piezo electric method, Detection of ultrasonic waves, Properties of ultrasonic waves, Determination of velocity of ultrasonic waves in liquids, Applications of ultrasonic waves.

Unit-2:

Electrical Conductivity in Metals : Classical Free Electron theory (Drude-Lorentz theory) Relaxation time, mean collision time, mean free path, drift velocity. Expression for electrical conductivity in metals. Effect of temperature and impurity on resistivity of metals. Electrons in periodic lattice, Kroning-Penny model (qualitative treatment). Energy bands, Metals, Insulators and semiconductors. Superconductivity, properties. Meissner effect – Type-I & Type-II Superconductors and applications.

Dielectric Materials: Polar and Non-Polar dielectrics, Polarization of dielectrics-Ionic Polarizability, Orientation polarizability, Electronic polarizability, expression for electronic polarizability, Frequency dependence of electronic polarizability, Ferro-electric crystals, piezo-electric crystals, Applications of ferro-electric and piezo-electric crystals.

Unit-3:

Moving Charges in fields: Motion of charged particle in an uniform electric, magnetic and combined field, Hall effect, CRO, Electromagnetic and Electrostatic Deflection sensitivities , Applications of CRO.

Lasers & Fibre Optics: Introduction, Properties of laser light, Requirement for laser action, Spontaneous and Stimulated emission, Population inversion, Pumping and active system, Ruby laser, Gas laser and Semiconductor laser, Applications of lasers. Principle of Optical fibre-Step-index fibre-graded-index fibre-Numerical aperture-Acceptance of angle-Transmission signal in Step-index and graded-index fibre-Optical fibres in communication and sensing applications.

Text Books :

1. Engineering Physics - by R.K. Gaur & S.L. Gupta (Dhanpatrai)
2. Unified Physics (Vol III)- by Satya Prakash (Pragathi Prakasam)

Reference Books :

1. Solid State Physics - by S.O. Pillai (New Age International)
2. Physics I & II by - by Halliday & Resnick (Wiley Eastern)
3. Solid State Physics - by K. Vijaya Kumar & T. Sreekanth (S. Chand)

Part – B Engineering Chemistry

Lectures: 1 Periods/week

Sessional Marks : 12
University Marks : 28

Unit – 4

Thermodynamics: System-isolated, closed and open systems, State of system. Homogeneous and heterogeneous systems, Extensive and intensive properties, Reversible and irreversible processes, Isothermal and adiabatic processes, First law of Thermodynamics, Internal energy, Enthalpy, Molar heat capacities, Application of equation to isothermal and adiabatic expansions of an ideal gas, Second law of Thermodynamics, its application to carnot cycle, conditions for equilibrium and spontaneity.

Electrochemistry: Electrode potentials, Nernst equation, Electrochemical series, applications of emf in the determination of pH.

Corrosion: Theories of Corrosion, Galvanic and Concentration cells, methods of minimizing corrosion – (a) Cathodic protection and (b) Metal coatings – Hot dipping and Electroplating.

Unit – 5

Polymers: Definitions, Addition and condensation polymerization (without mechanisms), Plastics – Thermosetting and Thermoplastic resins, compounding of plastics, preparation and engineering uses of (i) Polyethylene, (ii) Teflon (iii) Nylon (iv) PVC and (v) Bakelite. Natural Rubber – Preparation and processing of latex, Compounding of rubber, Vulcanization. Preparation and engineering uses of (i) Buna-S and (ii) Silicon rubber.

Fuels and Combustion: Classification of fuels, Characteristics of a good fuel, Calorific value – units, Gross and net calorific values, determination of calorific value by using Bomb calorimeter. Petrol – Knocking and octane number, Diesel – Ignition and cetane number. Manufacture, composition and uses of producer gas. Combustion calculations, Flue gas analysis by Orsat's apparatus

Text Books:

1. Essentials of Physical Chemistry – B.S.Bahl, G.D.Tuli and Arun Bahl (S.Chand & Co., New Delhi)
2. Engineering Chemistry – P.C.Jain and Monica Jain (Dhanpat Rai Publishing Company, New Delhi)

Reference Books:

1. Chemistry of Engineering Materials – C.V.Agarwal (Tara Publishers, Varanasi)
2. Chemistry of Engineering & Technology (Vol. I & II) – J.C.Kuriacose and T.Rajaram (Tata McGraw-Hill Pub. Co., New Delhi)
3. Text Book of Physical Chemistry – B.R.Puri, L.R.Sarma and M.S.Pathania (Shobhanlal Nagin Chand & Co., Jalandhar)

NETWORK THEORY (NT) **(Common to CSE & ECE Branches of I B.Tech)**

Contact Periods: (3 L + 1 L) /Week
University Exam: 3 Hours

Sessional Mark: 30
University Marks: 70

Unit- I

Basic circuit concepts: Basic circuit elements, Energy sources, source transformation, ohms law, Kirchoff's laws, concept of power and energy of R, L & C elements. loop analysis and nodal analysis, response of RLC circuits for arbitrary excitations.

Average and R.M.S values, form factor and peak factor of sinusoidal and non sinusoidal quantities. Phasor representation of AC quantities, response of RLC with sinusoidal excitation, concept of impedance, impedance triangle, admittance, concept of complex power, real, reactive power and power factor.

Unit – II

Analysis of series, parallel and series-parallel circuits with suitable examples and phasor diagrams, star-delta transformation.

Resonance: Series & Parallel resonance, Resonant Frequency, Voltage Magnification, Q-Factor, Band-Width and Half-Power Frequencies. Current locus diagrams of RL and RC circuits – their applications.

Unit-III

Network Topology: Concept of graph and tree, incident matrix, tie set and cut set schedules. Network Theorems: Superposition Theorem, Reciprocity, Thevenin's, Norton's, Maximum power Transfer, Millmans, Tellegens and Compensation theorems (simple problems).

Unit – IV

Coupled Circuits: Concept of self and mutual inductance, co-efficient of coupling, dot rule, conductively coupled and inductively coupled equivalent circuits with suitable problems

Polyphase Circuits: Generation of three Phase voltages, currents and power, phase sequence, Relation between Line & Phase quantities in Star and Delta Connection, Analysis of three Phase balanced and unbalanced circuits with vector diagram, Measurement of real & reactive power by one watt meter method & two wattmeter method, effect of Power factor on wattmeter reading.

Unit- V

Network Parameters: Two port network parameters, Impedance parameters, admittance parameters, transmission line parameters for a given T & n networks (simple problems).

Transients: Transients in RL, RC & RLC circuits for DC & AC excitations using Laplace transform methods.

Text Books:

1. Electric Circuits – by Joseph Edminister – Schaum's Series (TMH)
2. Circuit Theory – by Ajith Chakravarthy (Danpat Rai & Sons)
3. Electrical Circuit Theory – by R.P.Punagin, Interline Blr.
4. Circuit Theory – by Hayt & Kemmerly (MGH).

Reference Books:

1. Network Analysis – by Vanvalken Berg (PHI)
2. Circuits & Network – by Sudhakar & Shyam Mohan (TMH)
3. Networks & Systems – by Roy Choudary ,New Age .
4. Electric Circuits Theory – by R.L.Boylstad (UBS)

**ELECTRONIC DEVICES AND CIRCUITS (EDC)
(Common to CSE & ECE Branches of I B.Tech)**

Lectures: 4 Periods/week
University Exam: 3hours

Sessional Marks : 30
University Marks : 70

Unit-I

Semiconductor Diode: Semiconductor materials and its energy band diagram, quantitative theory, Hall effect, p-n junction as diode, band structures of an open circuited p-n junction, current components, quantitative theory of p-n diode currents, volt-ampere characteristics, temperature dependence, diode resistance, diode capacitance, breakdown diodes half-wave and full-wave rectifiers, capacitive and inductance filters.

Unit-II

Transistors: The junction transistor and its current components, transistor as an amplifier, detailed study of currents in transistor, transistor alpha, CB,CE configuration, CE cut-off saturation region, CE current gain, CC configuration, operating point, bias stability, collector to base bias, self bias stabilization, bias compensation, thermal runaway and stability. CE Amplifier, Two stage amplifier.

Unit-III

Field Effect Transistors: The junction FET, pinch off voltage, JFET V-I characteristics, FET small signal model, MOSFET, common source amplifier, common drain amplifier, generalized FET amplifier, biasing the FET, FET as voltage variable resistor. Introduction to fabrication of Integrated Circuits – Monolithic diodes & transistors.

Unit-IV

Advanced Electronic Devices and Oscillators: Characteristics and Operation of UJT, SCR, TRIAC, DIAC, Photodiode, Phototransistor.

Oscillators: Basic principle of oscillators (Barkhausen Criterion), Phase-shift oscillator, Colpitts, Hartley, Wien bridge oscillator.

Unit-V

Signals & Transmission Media:

Analog and digital signals, Encoding and Modulating – Digital to Digital Conversion, Analog to Digital Conversion, Digital to Analog Conversion, Analog to Analog Conversion. Transmission Media – Guided Media and Unguided Media.

TEXT BOOKS:

1. Electronic devices and circuits by Millman & Halkias(TMh) (Units I-IV)
2. Data Communications and Networking – Behrouz A. Forouzan - Tata McGraw Hill. (Unit –V)

ENVIRONMENTAL STUDIES (ESD)
(For II B.Tech., CSE -I Semester)

Contact Periods: (4L) / week
End Exam: 3 Hours

Sessional Marks: 30
End Exam Marks: 70

Unit 1 :

Introduction : Multidisciplinary nature of Environmental studies, definition, scope and importance.

Natural Resources:

Water resources-use and over utilization of surface and ground water, floods, drought, conflicts over water. Dams-benefits and problems.

Forest resources-use and over-exploitation of forests, deforestation, timber extraction, mining, dams and their effects on forests and tribal people.

Energy resources-growing energy needs, renewable and non-renewable energy sources, alternate energy sources, need for the conservation of energy.

Unit -2

Ecosystems: Concepts of an ecosystem, structure and function of an ecosystem, Energy and nutrient flow in an ecosystem, relation between producers, consumers and decomposers. Ecological succession, Food chains, food webs and ecological pyramids. Introduction, characteristic features and functions of (i) Forest ecosystem (ii) Grass land ecosystem (iii) Desert ecosystem (iv) Pond ecosystem (v) Ocean ecosystem and (vi) River ecosystem.

Unit -3

Biodiversity and its conservation: Definition, genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity-consumptive use, productive use, social, ethical, aesthetic and optional values. Threats to biodiversity-habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity.

Unit – 4

Environmental pollution: Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution and nuclear hazards. Role of individual in prevention of pollution.

Solid waste Management: Urban, industrial, nuclear and e-waste management.

Unit -5

Social Issues and Environment: Consumerism and waste products, from unsustainable to sustainable development. Population explosion-Family welfare programme. Environment and human health epidemics. Women and child welfare. Role of information Technology in environment and human health. Need for public awareness.

Environment protection Act: Air, Water, forest and wild life acts, enforcement of environmental legislation.

Text books:

1. Benny Joseph, "Environmental studies", Tata Mc Grow Hill.
2. Gilbert M. Masters, "Introduction to Environmental Engineering & Science", Pearson Education.
3. Chandrasekhar M., "Environmental Science", Hitech Publishers.

Reference books:

1. A.K. De, "Environmental chemistry", New Age India publishing.
2. E.P. Odum, "Fundamentals of Ecology", W.B. Saunders co. USA.
3. M.N. Rao and A.K. Datta, "Waste water Treatment", oxford and IBH.
4. Bharucha Erach, "The Biodiversity of India", Mapin publishing pvt. Ltd.

OBJECT ORIENTED PROGRAMMING (OOP) **(For II B.Tech CSE – I Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit – 1

Introduction to C++: Software Crisis, Software Evolution, Disadvantages of Conventional Programming, Programming Paradigms, Benefits of OOP, Key Concepts of Object Oriented Programming. Object Oriented Languages and applications.

C++ Declarations: Parts of C++ program, Types of Tokens, Keywords, Identifiers, Dynamic Initialization Data types, Type Modifiers, Wrapping Around, Type casting, constant pointers, operators and their precedence, Scope Access Operator, Memory Management Operators, comma Operator.

Unit – 2

Control Structures, Functions in C++, Introducing Classes, constructor and Destructor functions, constructors that take parameters, object pointers, classes and structures and unions are Related, Inline functions, Automatic In-lining.

Unit – 3

Assigning Objects, passing & returning to functions, Friend functions, Arrays, Pointers and references, Functions & Operator Overloading, virtual Functions.

Unit – 4

Inheritance – various types of Inheritances, abstract classes, constructors in derived classes. Files – stream – steps of file operations, Manipulators, working with various types of files.

Unit – 5

Templates – various types of templates, Manipulating strings, Declaring and Initializing Handling String objects, Relational Operators, attributes, accessing elements, comparing & exchanging. Exceptional Handling – principles, Try, Catch, Throw, Catching multiple Exceptions, Rethrowing, Exceptions in Constructors, Destructors, operator overloading, Inheritance, Templates.

Text books:

1. E. Balaguruswamy[3rd Edition] ,“Object Oriented Programming with C++”, TMH.
2. M.P. Bhawe, S.A. Patekar, “Object Oriented Programming with C++”, Pearson Education.

Reference books:

1. Herbert Schildt [3rd Edition], “Teach Yourself C++”, TMH.
2. Herbert Schildt, “The Complete Reference C++”.
3. Robert Lafore, “Object Oriented Programming in Turbo C++”
4. Ashok N. Kamthane, “Object Oriented Programming with ANSI & Turbo C++”, Pearson Education.

DATA STRUCTURES (DS) **(For II B.Tech CSE – I Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit – 1

Introduction to Data Structures: Definition, Classification of Data structures, Sequential storage representation – Arrays, Applications of arrays – Linear Search, Binary Search, Bubble Sort. Linked List : Pointer and Linked storage representation, Types of Linked List – Single linked list, Double linked list without and with header nodes, Circular linked list ,Operations on linked list- Traversing, Searching, Insertion and Deletion. Applications of linked list – Polynomial manipulation.

Unit – 2

Linear Data Structures : Stacks, Representation of Stacks Using sequential storage and Using Linked allocation. Operations on Stacks, Application of Stacks- Recursion, Polish notations, Conversion of infix to post fix notation, Evaluation of postfix expression. Queues, Representation of Queues using sequential and linked allocation, operations on queues, circular queue.

UNIT – 3

Nonlinear Data Structures : Trees – Basic terminology, Binary trees, Representation of Binary trees in memory using arrays and linked list. Operations on binary trees- Insertion, deletion and traversing- preorder, inorder and post order. Applications of binary trees. Threaded binary trees, AVL trees and its operations.

UNIT – 4

Special Tress : Splay tress, B-Trees and their operation..

Priority Queues (Heaps): Model, simple implementaions, Binary heap, applictions of priority queues, d-heaps, leftist heaps, skew heaps, Binomial queues.

UNIT – 5

Sorting: Insertion sort, Shell sort, Heapsort, Quick sort.

Hashing: Definition, Hash function, Open hashing (separate chaining), Closed hashing(open addressing) – linear probing, quadratic probing, double hashing, Rehashing, Extendible hashing

Text books:

1. JEAN PAUL TREMBLAY, PAUL G.SORENSEN, "An Introduction to Data Structures With Applications".
2. MARK ALLENWEISS, "Data Structures and Algorithm Analysis", PEARSON EDUCATION.

Reference books:

1. N.KASIVISWANATH,"Data Structures Using C++", LAXMI PUBLICATIONS (P) LTD.
2. E.BALAGURUSWAMY,"Object Oriented programming with c++".

SWITCHING THEORY AND LOGIC DESIGN (STLD) (For II B.Tech CSE – I Semester)

Contact Periods: (4L+1T)/week

Sessional Exam Marks: 30

End Exam: 3 Hrs

End Exam Marks: 70

Unit-1

NUMBER SYSTEM AND BINARY CODES: The Decimal, Binary, Octal, Hexa-Decimal Number System, Number Base Conversions, Complements, Binary Arithmetic In Computers, Weighted Binary codes, Non Weighted Binary codes, Error Detecting Codes, Error Correcting Codes, Parity Checking.

Unit -2

BOOLEAN ALGEBRA AND MINIMIZATION OF BOOLEAN FUNCTIONS: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic gates, The Map Method, Two, Three, Four, Five and Six variable maps, Product of Sums Simplification, NAND and NOR Implementations, Other two Level Implementations, Don't Care Conditions, The Tabulation Method, Determination of Prime Implicants, Selection of Prime Implicants.

Unit -3

COMBINATIONAL LOGIC: Introduction, Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, Multilevel NAND Circuits, Multilevel NOR Circuits, Exclusive-or and Equivalence Functions, Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoders, Multiplexers, Read Only Memory (ROM), Programmable Logic Array (PLA),

Unit -4

SEQUENTIAL LOGIC: Introduction, Flip Flops, Triggering of Flip Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip Flop Excitation Tables, Design Procedure, Design of Counters, Design with State Equations.

Unit -5

REGISTERS, COUNTERS AND THE MEMORY UNIT: Introduction, Registers - Registers with parallel load, Sequential Logic Implementation, Shift Registers - Serial Transfer, Bi-directional Shift Register with parallel load, Serial Addition, Ripple Counters - Binary Ripple Counter, BCD Ripple Counter, Synchronous Counters - Binary Counter, Binary Up-Down Counter, Timing Sequences - Word-time Generation, Timing Signals, Johnson Counter The Memory Unit, Examples of Random Access Memories.

Text books:

1. M.Morris Mano, "Digital Logic and Computer Design", Pearson Education.
2. Zvi Kohavi," Switching And Finite Automata Theory"

Reference books:

1. F.J.Hill and G.R.Peterson [3rd Edition], "Introduction to switching theory and logical design".
2. Donald D. Givone , "Digital Principles and Design" , Tata Mc Graw Hill

DISCRETE STRUCTURES & GRAPH THEORY (DSGT)**(For II B.Tech CSE – I Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Foundation: Sets and Operations of Sets, Relations and Functions, Some Methods of Proof and Problem Solving Strategies, Fundamentals of Logic, Logical Inferences, Methods of Proof of an Implication, First Order Logic and Other Methods of Proof, Rules of Inference for Quantified Propositions, Mathematical Induction.

Unit-2

Elementary Combinatorics : Combinations and Permutations, Enumeration of Combinations and Permutations ,Enumerating Combinations and Permutations with Repetitions, Enumerating Permutations with Constrained Repetitions.

Unit-3

Recurrence Relations: Generating Functions of Sequences, Calculating Coefficients of Generating Functions, Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, The Method of Characteristic Roots, Solutions of Inhomogeneous Recurrence Relations.

Unit-4

Relations and Digraphs: Relations and Directed Graphs, Special Properties of Binary Relations, Equivalence Relations, Ordering Relations, Lattices ,Operations on Relations, Paths and Closures, Directed Graphs and Adjacency Matrices

Unit-5

Graphs: Basic Concepts, Isomorphisms and Subgraphs, Trees and Their Properties, SpanningTrees, Directed Trees,BinaryTrees, Planar Graphs, Euler's Formula, Multigraphs and Euler Circuits,Hamiltonian Graphs, Chromatic Numbers, the Four-Color Problem.

Text books:

1. Trembly and manohar,"Discrete mathematical structures with applications to computer science", Mc-Graw-Hill International Editions.
2. Joe L.Mott, Abraham Kandel,Theodore P.Baker.
[2nd Edition], "Discrete Mathematics for Computer Scientists and Mathematicians",Pearson Education.

Reference books:

1. Liu," Elements of discrete mathematics", McGraw-Hill.
2. Ralph P.Grimaldi [5th Edition], "Discrete and Combinational Mathematics-An Applied Introduction", Pearson Education.

FILE STRUCTURES AND DATA PROCESSING (FSDP)

(For II B.Tech CSE – I Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Data Processing Concepts: Introduction, Data Processing Functions, Data Recording, Input/Output and Storage Devices, The Central Processing Unit (CPU), Computer Generations.

File Concepts and Program Logic: File Concepts, Record Layout, PROGRAM LOGIC – ALGORITHM, Flow Chart Symbols, Sample Flow Charts.

Direct Access Files: Direct Access Storage, Characteristics of Magnetic Disk Storage, Recording Data on Disk, Data Record Formats, File Organization Methods.

Unit-2

Structural Organisation of COBOL: Character Set, Words, Sentences, Identification Division, Environment Division, Data division, Data types, Numeric, Alphabetic & Alphanumeric, Input-output sections working storage section.

PROCEDURE division FEATURES: ACCEPT, DISPLAY, MOVE, Arithmetic & COMPUTE verbs, sample programs, PERFORM & GOTO verbs, STRING, UNSTRING, INSPECT & COPY verbs, sample programs using PERFORM, Miscellaneous COBOL statements.

Unit-3

Conditional statements & Table handling: relation conditions, Nested Conditions, Class conditions, Condition-name Conditions, Structured Programming forms of program structure, structural flowcharts, Subscripting, occurs clause, Multidimensional tables, Table handling with PERFORM verb, SET verb, SEARCH verb .

Unit-4

COBOL SUBROUTINES:

Structure of a COBOL Subroutine, the Calling of a Subroutine, State of a Subroutine and CANCEL statement.

Sequential files, Relative files, indexed sequential files, COBOL instructions for sequential files, Relative file organisation and indexed sequential files.

Unit-5

SORTING, SEARCHING & MERGING: Linear search sorts, Merge sort, Linear search, Binary search, File sorting & merging using sequential files.

REPORT GENERATION: output layout design, Heading, Date & Detailed summaries Control breaks, Language specifications for COBOL report writing.

Text books:

1. M.K.ROY, D.Ghosh Dastidar , "COBOL Programming".
2. S.Philiphakis, "Information System through COBOL".

Reference books:

1. Nancy Stern and Robert A. Stern, "Structured COBOL Programming"

MANAGERIAL ECONOMICS & PRINCIPLES OF ACCOUNTANCY (MEPA)

(For II B.Tech CSE - II SEMESTER)

Contact Periods: (4L)/ Week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-I

Introduction to Managerial Economics: Definition, Nature and Scope of Managerial Economics- Demand Analysis, Types of Demand, Law of Demand, its assumptions and exceptions.

Elasticity of Demand- Definition- types-price, income, cross elasticities of demand-significance, and measurement-demand forecasting, factors-methods.

Unit-II

Theory of production and cost analysis: Production function-isoquants and isocosts- Least cost combination of inputs- The Law of diminishing marginal returns- Internal and external economies of scale.

Cost Analysis: Cost concepts-fixed and variable costs-cost output relationship- Break Even Analysis- Managerial uses.

Unit-III

Market Structures- Types, features of perfect competition – Monopoly and Monopolistic competition- Price output determination in perfect competition and Monopoly – Pricing methods.

Unit-IV

Business Environment: Types of business organizations – formation of sole traders-partnership firm – Joint Stock Companies- features- Private and Public Limited Companies-formation-merits and demerits-differences Capital and its significance-types of capital-estimation of fixed and working capital requirements-methods and sources of Raising fixed capital and working capital.

Unit-V

Introduction to Accountancy: Double entry system of book keeping – Journal entries – Ledger- Trail Balance. Preparation of final Accounts- Trading Account- Profit & Loss Account-Balance Sheet with adjustments (Final Accounts problem should be given).

Text books:

1. Varshney and Maheswari, "Managerial Economics".
2. Y. K . Bhushan, "Business Organization & Management".
3. Shukla & Grewal, "Accountancy"

COMPUTER GRAPHICS (CG) **(For II B.Tech CSE – II Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit- 1

Applications of computer graphics, points, lines, pixels and frame buffer, primitive operations, frame buffer, screen grid coordinates, normalized device coordinates, line drawing algorithms- DDA, Bresenham's line, Bresenham's circle, Mid-point circle algorithms, character generation, aliasing, line, text attributes.

Unit- 2

Display Devices: CRTs, Raster scan systems, Random scan systems, Refresh CRT, Color CRT monitor, DVST (Direct View Storage Tube), Flat panel displays. Graphics Input devices: Joy stick, light pen, tablet and digitizer.

Polygon Generation and Filling algorithms: Types of polygons, representation of polygons, Entering polygons, Inside-Outside test (odd-even, winding method), scan-line polygon fill, boundary fill, flood fill algorithm.

Segments: Segmentation and segment tables, Operations on Display file segments, Image transformation.

Unit – 3

2D Transformations: Types of transformations: coordinate transformation, geometric transformation, basic transformations: Translation, scaling, rotation, homogeneous coordinates, compound transformation: reflection, shearing, transformation about arbitrary points & lines

Windowing and Clipping: Window, view port, viewing transformations, clipping, Cohen-Sutherland line clipping, Sutherland-Hodgeman polygon clipping algorithm.

Unit - 4

3D Graphics: 3D transformations, 3D object representations. Projection: parallel, isometric, perspective viewing, 3D viewing transformation, hidden surface & lines, back face detection & removal, Z-buffer, painter's algorithm.

Unit - 5

Curves: Introduction, curve generation, interpolation, B-spline, B-splines & corners, Biezer curve Algorithm.

Color model: RGB, YIQ, CMY, HSV, HLS, introduction to animation, morphing.

Text books:

1. Donald Hearn & M. Pauline Baker [Eastern Economy Edition], "Computer Graphics C Version II edition.
2. Steven Harrington, "Computer Graphics, A programming approach".

References books:

1. David F. Rogers [II Edition], "Procedural elements of Computer Graphics", TMH Co.
2. Schaum's outlines [II Edition], "Computer Graphics".
3. W. M. Newman & R. F. Sproull [II Edition], "Principles of Interactive Computer Graphics", Tata McGraw Hill Co.

**COMPUTER ORGANIZATION AND ARCHITECTURE (COA)
(For II B.Tech CSE – II Semester)**

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit 1**Programming the basic computer:**

Introduction, machine language, assembly language, assembler, Loops, programming arithmetic and logic operations, subroutines, Input/output programming.

Micro programmed control:

Control memory, address sequencing, micro program example, Design of control unit.

Unit 2**Basic Computer organization and design:**

Instruction codes, computer registers and instructions, timing And control, instruction cycle, memory reference instructions, Input/output and interrupt, complete computer description, Design of basic computer, design of accumulator logic.

Unit 3**Central processing unit:**

Introduction, general register organization, stack organization Instruction formats, addressing modes, data transfer and Manipulation, program control, RISC AND CISC.

Unit 4**Pipeline and vector processing:**

Parallel processing, pipelining, arithmetic and instruction Pipeline, RISC pipeline, vector processing, array Processors.

Computer arithmetic:

Introduction, addition and subtraction, multiplication Algorithms, division algorithms, floating point arithmetic.

Unit 5**Input/output organization:**

Peripheral devices, input/output interface, asynchronous Data transfer, modes of data transfer, priority interrupt, DMA, input/output processor, serial communication.

Memory organization:

Memory hierarchy, main memory, auxiliary memory, Associative memory, cache memory, virtual memory, Memory management hardware.

Text books:

1. M. Morris Mano [Third Edition], "Computer system architecture", Pearson Education

Reference books:

1. Andrew. S. tannenbaum [Fifth Edition], "Structured computer organization", Pearson Edition.
2. Hayes, "Computer organization&architecture".
3. Hamacher & Vranesic [4th Edition], "Computer Organization", TMH.

DATABASE MANAGEMENT SYSTEMS (DBMS) **(For II B.Tech CSE – II Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit – 1

Introduction: Purpose of Database Systems, View of Data, Data Models, Database Management, Storage Management, Database Administrator, Database Users, Overall System Structure.

Entity-Relationship Model: Basic Concepts, Design Issues, Mapping Constraints, Keys, Entity-Relationship Diagrams, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of an E-R Schema to Tables.

Unit – 2

Relational Model: Structure, The Relational Algebra, Extended Relational Algebraic Operations, Modification of Database, Views.

SQL: Form of Basic SQL Query, Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries Set, Comparison Operators, Aggregative Operators, Null Values, Comparison Using Null values, Logical Connectivity's – AND, OR, and NOT, Impact on SQL Constructs. Outer Joins, Disallowing Null Values, Complex Integrity Constraints in SQL Triggers and Active Data Bases

Unit – 3

Relational Database Design: Pitfalls, Decomposition, Normalisation using Functional Dependencies, Multivalued Dependencies, Join Dependencies, Domain-Key Normalisation Form, Alternative approaches.

Unit – 4

Indexing and Hashing: Basic Concepts, Ordered Indices, B Plus Tree Index Files, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Index definition in SQL, Multiple Key Access.

Transactions: Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Transaction Definition in SQL, Testing for Serializability.

Unit – 5

Lock-Based Protocols: Timestamp-Based Protocols, Validation Based Protocols, Multiple Granularity, Multiversion Schemes, Deadlock handling, Insert and Delete Operations, Concurrency in Index Structures.

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log-Based Recovery, Shadow Paging, Recovery with Concurrent Transactions, Buffer Management, Failure with Loss of Non-Volatile Storage, Advanced Recovery Techniques.

Text books:

1. Henry F. Korth & Abraham Silberschatz [1997], "Data Base System Concepts" MC Graw Hill Fifth Edition.
2. Elmarsi Navrate, "Data Base Management System", Pearson Education.

Reference books:

1. C J Date, "An Introduction to Data Base Systems", Pearson Education.
2. Raghurama Krishnan, Johannes Gehrke [3rd Edition], "Data Base Management Systems", TATA Mc GrawHill.

SYSTEM ANALYSIS AND DESIGN (SAD) **(For II B.Tech CSE – II Semester)**

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction to Information system development: What is system analysis and design Overview, System analyst's work, What is system , System characteristics, categories of Information systems, system development strategies, Classical system development life cycle, Determination of system requirements , design of system, development of software , system testing Implementation and evaluation , structured analysis and development method, System prototype method , Reasons for system prototyping, Methods for prototype development.

Unit-2

Managing the application development portfolio – Managing project review and selection , User Group committee method, other methods, Preliminary Investigation , scope of study , Conducting the Investigation , Testing project feasibility , Handling infeasible projects , Selecting the project development strategy

Unit-3

Requirements Analysis and Determination: What is requirements Determination, Tools for documenting procedures and decisions, Decision concepts, Decision trees Decision tables, Types of table entries, structured English, structured analysis, Features of data flow strategies, Developing data flow diagrams

Unit-4

System Design: Process and stages of System Design, Input/Output and form design
System Implementation: System testing and quality Assurance, Implementation and software maintenance

Unit-5

System Disaster/Recovery and Ethics in System development, System security: Definitions, Threats to system security, control measures. Disaster/Recovery planning: The plan. Ethics in system development: Ethics codes and Standards of behaviour.

Text books:

1. James A. Senn, "Analysis and Design of Information Systems".
2. Elias M. Awad, "System Analyses and Design"

Reference books:

1. Ditten, "System Analysis and Design", TMH

JAVA PROGRAMMING (JP) (For II B.Tech CSE – II Semester)

Contact Periods: (4L+1T)/week

Sessional Exam Marks: 30

End Exam: 3 Hrs

End Exam Marks: 70

Unit I

Over view of java, Data types, Variables and arrays, operators, Control statements, Classes and objects.

Unit II

Inheritance - Basic concepts, using super, method overriding, Dynamic method dispatch, Abstract class, using final, The object class.

Packages and Interfaces - Packages, Access protection, Importing packages, Interfaces.

Unit III

Exception Handling - Fundamentals, Types of Exception, Usage of try, catch, throw, throws and finally keywords, Built in Exceptions.

Multithreading - Concepts of multithreading, Main thread, creating thread and multiple threads, Using isAlive() and join(), Thread Priorities, synchronization, Interthread communication.

Unit IV

I/O and Applets - I/O Basics, Reading Console input, writing Console output, Reading and Writing Files, Applet basics and Applet class.

Event Handling - Basic concepts, Event classes, Sources of events, Event listener Interfaces, Handling mouse and keyboard events, Adapter classes.

Unit V

Abstract Window Toolkit (AWT) - AWT classes, Concepts of component, container, panel, window, Frame, Canvas, Font, Color, and Graphics.

AWT Controls - Control basics, Labels, Buttons, Check boxes, check box group, choice, Lists, Scroll Bars, Text field, Text Area, Layout Managers and Menus.

Text books:

- 1) Bruce Eckel [2nd Edition], "Thinking in Java", Pearson Education.
- 2) Herbert Schildt[5th Edition], "The Complete Reference Java2", TATA McGraw-Hill.

Reference Books:

1) H.M Dietel and P.J Dietel[6th Edition], "Java How to Program", Pearson Education.

OPERATING SYSTEMS (OS)

(For III B.Tech CSE – I Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction: What is Operating Systems, Concepts - process, Files, System calls, Shell, Operating System Structure - Monolithic Layered Systems, Virtual Machines, and Client-Server Model.

Process Management: Processor Management - Introduction, Concepts, and Performance Criterion. Concurrent Process - Concept, Producer/Consumer Problem, Semaphore, Classical Coordination Problem, Language Constructs. Inter process Communication, Classical IPC problems, Process scheduling.

Unit-2

Memory Management: Preliminaries, Bare Machines, Resident Monitor, Swapping, Multiple Partitions, Paging, and Segmentation, Combined Systems

Virtual Memory: Overlays, Demand Paging, Performance of Demand Paging, Page Replacement, Virtual Memory Concepts, Page Replacement Algorithms, Allocating Algorithms, Thrashing.

Unit-3

Secondary Storage Management– Physical characteristics – Device directory – Free space management – Allocation methods – Disk scheduling – Sector queuing – Storage hierarchy. File Systems: File Concepts, File Support, Access Methods, Allocation Methods, Directory Systems, File Protection, and Implementation Issues.

Unit-4

Deadlocks: Deadlock Problem, Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Deadlock Recovery Protection: Goals of Protection, Mechanisms and Policies, Domain of Protection, Access Matrix, Implementation of Access Matrix, Dynamic Protection Structures, Revocation, Existing Systems, Languages-Based Protection, Protection Problems, Security.

Unit-5

The Unix Operating System: History, Design Principles, Programmer Interface, User Interface, File System, Process Management, Memory Management, I/O System, Inter process Communication.

Text books:

1. TANNUNBAUM, "MODERN OPERATING SYSTEM", Pearson Education.
2. Silberschatz, Galvin, "Operating System Concepts"

Reference books:

1. Gagne [6th Edition, 2003], "Operating System Concepts", John Wiley & Sons, Inc publishers.(Chapters 1- 14, 18, 19).

ADVANCED UNIX PROGRAMMING (AUP)

(For III B.Tech CSE –I Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit – 1

Basics of UNIX: Introduction to UNIX operating system, UNIX history, features, and architecture, Unix File System, Unix Session, Working with files and directories, using the VI editor, Command Shell and X window system.

Unit – 2

Shell Programming: What is Shell, Types of Shells, Shell Script, Shell Variables, Shell Keywords, System Variables and User-defined Variables, Command line Arguments, Arithmetic in Shell Script, Decision making statements and the loop control structure.

Unit – 3

Basic System Administration: Setup Procedures, Maintenance Tasks, Security for System Administrators.

Unit – 4

Processes and Signals: Processes, ps command, kill command, parent and child processes, Process Scheduling, Process Priorities and Signals.

System Security: User and group IDs, Access Control Lists, Password Files, File Encryption and Pretty Good Privacy.

Unit – 5

Inter-Process Communication: Pipes, FIFOs, Semaphores, Message Queues and Shared Memory.

Text Books:

1. Kenneth H. Rosen and Douglas A. Host [second edition], "UNIX-The Complete Reference", TMH,.
2. Yashavant Kanetkar [First Edition], "UNIX Shell Programming", BPB Publication.
3. W.R. Stevens, "Advanced Programming in the UNIX Environment", Pearson Education.

References:

1. Brian W. Kernighan and Rob Pike, The UNIX Programming Environment, Prentice-Hall India.
2. Sumitabha Das [Fourth Edition], "UNIX Concepts and Applications", Tata-McGraw Hill Publication.

THEORY OF COMPUTATION (TC) (For III B.Tech CSE – I Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit- 1

Finite Automata preliminaries: Strings, Alphabet, Language Operations, Finite State Machine definitions, Finite Automaton Model, Acceptance of strings and languages, Non-deterministic Finite Automaton, Equivalence between two NFA and DFA, conversion of NFA into DFA, Equivalence between two FSM's, Moore and Mealy machines, Minimization of FSM, Applications of FA's.

Unit -2

Regular Expressions and Regular Sets: Regular sets, Regular expressions, Identity rules, Manipulation of regular expression, Equivalence between RE and FA, Inter conversion, Pumping lemma, Closure properties of regular sets.

Unit -3

Grammar Formalism : Regular grammar-Right linear grammar and left linear grammar, Equivalence between regular linear grammar and FA, Inter conversion between RE and RG, Derivation trees, Right most and left most derivation of strings. Context Free Grammar: Ambiguity in CFG, minimization of CFG, Chomsky Normal Form, Griebach Normal Form, pumping lemma of CFG.

Unit - 4

Push Down Automata: Definition, model acceptance of CFL, Equivalence of CFL PDA, and interconversion, Properties of CFL. Turing Machines: Turing machine definition, model, design of TM, Computable functions, Recursively enumerable language, Church's hypothesis, Universal Turing machine.

Unit- 5

Computability Theory: Model of Linear Bounded Automaton, TM and type0 grammars, LBA and Languages, Halting problem of TM.

LR(k)grammars: properties of LR(k)grammars, LR(k) grammar. primitive recursive functions, partial recursive functions and TMs.

Text books:

1. Hopcroft H.E. and Ullman J.D.[Second Edition], "Introduction to Automata Theory Languages and Computation", Pearson Education.
2. Mishra and Chandrashakaran, "Theory of computer sciences: Automata languages and computation". Pearson Education.

Reference books:

1. John C Martin, "Introduction to languages and the theory of computation", TMH.

SOFTWARE ENGINEERING (SE) **(For III B.Tech CSE– I Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit 1

Introduction To Software Engineering And Process Models:- The evolving role of software changing nature of software, software myths.

Software Engineering-A layered technology, A process framework.

Process Models-The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

Unit 2

Software Requirement And Requirement Engineering Process:

Functional and nonfunctional requirements, User requirements, System requirements, The software requirements document.

Requirement Engineering Process: Feasibility studies, Requirements elicitation and analysis, Requirement validation, Requirement Management.

Unit 3

Design-Design process and Design quality, Design concepts, Design Model.

Creating an Architectural Design-Software Architecture, Data Design, Architectural Styles & patterns. Architectural design.

Unit 4

Testing & Metrics:

Testing Strategies-A strategic approach to Software testing, test strategies for Conventional software, White Box Testing-Basis Path Testing, Control Structure Testing, Black Box Testing, Validation Testing, System Testing, The art of Debugging.

Metrics for Process & Products-Software Measurement, metrics for software quality.

Unit 5

Risk & Quality Management:

Risk Management-Reactive vs Proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM, RMMM plan.

Quality Management-Quality Concepts, software quality assurance, software reviews, formal technical reviews, statistical Software quality assurance, software reliability, The ISO 900 quality standards.

Text books:

1. Sommerville[7th Edition], "Software Engineering", Pearson education
2. Roger S.Pressman [6th Edition], "Software Engineering, A Practitioner's Approach", Mc GrawHill International Edition.

Reference books:

1. K.K.Agarwal & Yogesh Singh, "Software Engineering", New Age International Publishers.
2. James F.Peters, Witold pedecz, John Wiely, "Software Engineering-an Engineering approach".
3. Shely Cashman Rosenblatt, "System Analysis and Design", Thomson Publications.
4. Waman S Jawadekar, "Software Engineering principles and practice" The McGraw-Hill Companies.

VISUAL PROGRAMMING TECHNIQUES (VPT) **(For III B.Tech CSE – I Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit- I

Visual Programming Environment:

Integrated Development Environment for VC++, Components of Visual C++ ,

Parts of VC++ : Application Object, Main window Object, View Object, Document object, Document/view architecture.

Unit-II

Reading Keystrokes, Handling Mouse, Creating Menus, Tool bars,

Status bar ,Accelerator Keys ,Shortcut keys ,Windows Message looping& Mapping

Unit-III

Handling Dialogs, Model & Modeless Dialog boxes, Buttons ,Check boxes
Radio Buttons, List Boxes, Combo boxes ,Sliders ,Serialization ,File Handling

Unit-IV

Multiple Documents, creating & using property sheets
Working with splitter windows, Trees

Unit-V

Active X Controls ,Database connection ,Web Browser.

Text books:

1. Steven Holzner, "Microsoft Visual c++6", BPB publication.
2. David j.kruglinski ,George Shepherd and Scot Window[5th Edition], "Programming Visual c++".

Reference books:

1. Lars K Lander , "Core Visual c++6", Pearson Education.
2. Steven Holzner, "Microsoft VC++5", BPB Publications

DATA COMMUNICATION (DC) **(For III B.Tech CSE – I Semester)**

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

A Communicational model, Data communication networking, Architecture(TCP/IP, OSI model). Analog and Digital Transmission, Transmission Impairments, Guided Transmission Media and Wireless transmission.

Data Encoding : Digital data digital signals, Analog data digital signals, Digital data analog signals, Analog data analog signals.

Unit- 2

Asynchronous and Synchronous transmission, Line configuration.

Data Link Control: Flow control, Error detection , Error control, Data link control protocols(HDLC).

Unit- 3

Multiplexing: FDM, TDM, Circuit switching, Packet Switching.

Channel Allocation Problem in LANs and MANs , Multiple Access Protocols

Unit- 4

Local Area Networks: LAN technologies, IEEE Standards; CSMA/CD, Token Bus, Token Ring. Transparent and Source Routing Bridges. High Speed LANs.

Unit- 5

Narrowband ISDN, ISDN services, System Architecture, ISDN interface, perspective on ISDN.Broadband ISDN and ATM: Virtual circuits and circuit switching, Transmission for ATM networks, ATM switches.

Textbooks:

1. Behrouz A Forouzan [4th edition], "Data Communications and Networking", Tata McGraw Hill.
2. Andrew S.Tenenbaum [III edition], "Computer Networks", Pearson Education.

Reference books:

1. William Stallings, "Data and Computer Communication", Pearson Education.

COMPUTER NETWORKS (CN)
(For III B.Tech CSE – II Semester)

Contact Periods: (5L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Review of ISO OSI Reference Models, TCP/IP and Hybrid Models.
Network layer: Design Issues, services, internal organization, comparison of virtual circuits and datagram subnets. Routing Algorithms: The optimality principle, shortest path routing, Flooding, Flow based, Distance vector, Link state, Hierarchical, Broadcast and Multicast Routings. Congestion control algorithms: principles, congestion prevention policies, traffic shaping, flow specification, congestion control in virtual circuits, choke packets load shedding, jitter control.

Unit- 2

Internetworking: How Networks differ, concatenated virtual circuits, connectionless internetworking, tunneling, Internet work routing, Fragmentation.
The Network layer of the Internet: The IP protocol, IP address, subnets, Internet Control protocols, Gateway routing protocols, OSPF, BGP, Mobile IP, IPv6

Unit- 3

Transport Layer: Service/Quality of service, service primitives, Addressing, Establishing a connection, releasing a connection, flow control, buffering, Multiplexing and crash recovery.
Internet Transport Protocols: TCP and UDP.

Unit- 4

Application Layer: DNS: The DNS Name Space, Resource Records, And Name Servers.
Electronic Mail:
Architecture and Services, The User Agent, Message Format, Message Transfer, Final delivery.
The World Wide Web: Architectural Overview, Static and Dynamic web Documents, HTTP, Performance Enhancements, and The Wireless Web.

Unit- 5

Network Security: Cryptography, symmetric key, public key Algorithms, Digital signatures, Communication Security, Authentication Protocols, Email Security, Web Security.

Text books:

1. BA Forouzan [3rd Edition], "Data Communications and Networking", TMH
2. Andrew S.Tenenbaum [4th Edition], "Computer Networks", Pearson Education.

Reference books:

1. S.Keshav [II Edition], "An Engineering Approach to Computer Networks", Pearson Ed.

LANGUAGE PROCESSORS (LP)
(For III B.Tech CSE – II Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit - I

Assemblers: General Design Procedure, Design of Assembler, Table
Processing: Searching and Sorting.
Compilers: Basic function of Language translator, differences between compiler and interpreter, bootstrapping, logical phase of a compiler, difference between pass and phase, grouping the phases into passes, compiler construction tools. Lexical Analysis: The role of lexical analyzer input buffering, specifications of tokens, recognition of tokens, a language for specifying lexical analyzers, design of a lexical analyzer generators.

Unit - II

Syntax Analysis: Role of parser, parsing, top down parsing - recursive decent parsing, predictive parsers, non recursive predictive parsing, bottom up parsing, operator precedence parsing, L R parsers, using ambiguous grammars, parser generators.

UNIT - III

Semantic Analysis: Typical semantic errors, type checking, type conversions, specification of a simple type checker, equivalence of type expressions, overloading of functions and operators, polymorphic functions, storage allocations, strategies of storage allocation, static, dynamic and heap.

Unit - IV

Intermediate Code Generation: Intermediate code languages - three address code, types of three address code, syntax directed translation into three address code, implementations of three address statements - quadruples, triples, indirect triples, declarations, Boolean expressions back patching.

Unit - V

Code Generation And Code Optimization: Issues in the design of code generator, the target machine, run-time storage management, basic blocks and flow graphs, next use information, a simple code generator, DAG representation of basic blocks, peephole optimization, generating code from dags. Introduction to code optimization, principles sources of optimization, optimization of basic blocks.

Text books:

1. Alfred V.Aho, Ravi Sethi, Jeffrey, D.Ullman, "Compilers Principles, Techniques and tools", Pearson edition
2. Alfred V. Aho, Jeffrey D. Ullman , "Principles of Compiler Design" Naroba Publications.
3. John J. Donovan, "Systems Programming", Tata McGraw-Hill Edition

Reference books:

1. Tremblay & Sorenson, "Theory & practice of compiler writing", MCGrawHill.
2. Niklaus wirth , "Compiler Construction", Naroba Publications

PRINCIPLES OF PROGRAMMING LANGUAGES (PPL) (For III B.Tech CSE – II Semester)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction:

The Study of Programming Languages - A Short History of Programming Languages, What makes a Good Language?

Effects of Environments on Languages- Batch Processing Environments, Interactive Environments, Embedded System and Environments, Programming Environments.

Language Design Issues: The structure and operation of a Computer - The Hardware of the computer, Firmware Computers, Translators and Software Simulated Computers. Virtual Computers and Binding Times - Syntax and Semantics, Virtual Computers and Language Implementations, Hierarchy of Computers, Binding and Binding Time.

Unit-2

Data Types: Properties of Types and Objects- Data Objects, Variables, Constants, Data Types, Specification and Implementation of Elementary Data Types, Declarations, Type Checking and Type Conversion, Assignment and Initialisation.

Elementary Data Types - Numeric Data Types, Enumeration's, Boolean, Characters.

Structured Data Types - Structured Data Objects and Data Types, Specification of Data Structure Types, Implementation of Data Structure types, Declaration and Type Checking for Data Structures, Vectors and Arrays, Records, Lists, Character Strings, Pointers and Programmer-Constructed Data Objects, Sets, Executable Data Objects, Files and Input-Output.

Unit-3

Abstraction and Inheritance: Abstract Data Type - Evaluation of Data Type Concept, Information Hiding.

Encapsulation by Subprograms - Subprograms as Abstract Operations, Subprogram Definition and Invocation, Subprogram Definition as a Data Object.

Inheritance - Derived Classes, Methods, Abstract Classes, Objects and Messages, Polymorphism.

Type Definitions - Type Equivalence, Type Definitions with Parameters.

Storage Management - Major Run Time Elements Requiring Storage, Static Storage Management, Stack Based Storage Management, Heap Storage Management (Fixed-Size Elements and Variable-Size Elements).

Unit-4

Sequence Control:

Sequence Control - Implicit and Explicit Sequence Control, Sequencing with Arithmetic Expressions - Tree-Structured Representation, Execution-Time Representation. Sequence Control between Statements - Basic statements, Structured Sequence Control. Subprogram Sequence Control- Simple Call-Return Subprograms, Recursive Subprograms. Attributes of Data Control - Names and Referencing Environments, Static and Dynamic Scope, Block Structure, Local Data and Local Referencing Environments. Parameters and Parameter Transmission mechanisms. Variations on Subprogram Control - Exceptions and Exception Handlers, Co-Routines.

Unit-5

Concurrency: Basic concepts, semaphores, monitors, message passing

Functional Languages: Basics of LISP - Sequence Control, Subprograms and Storage Management, Abstraction and Encapsulation. **Object-Based Languages:** Basics of Small Talk - Data Objects, Sequence Control, Subprograms and Storage Management, Abstraction and Encapsulation. **Logic Programming Languages:** Basics of Prolog - Data Objects, Sequence Control, Subprograms and Storage Management, Abstraction and Encapsulation

Text Books:

1. Terrence W.Pratt, "Programming Language Design and Implementation".
2. E.Horowitz , "Fundamentals of Programming Languages".

DESIGN AND ANALYSIS OF ALGORITHMS (DAA) (For III B.Tech CSE – II Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction:-What is an Algorithm ?, Performance Analysis, Asymptotic notation.

Divide and Conquer :- General method, Binary search, Finding Maximum and Minimum, Merge sort, Quick sort, Selection sort, Strassen's Matrix Multiplication.

Unit-2

Greedy Method :- The General Method, Knapsack Problem, Tree Vertex Splitting, Job Sequencing with Deadlines, Minimum-Cost Spanning Tree, Optimal Storage on Tapes, Optimal Merge Patterns, Single Source Shortest Path.

Basic Traversal and Search Techniques :- Techniques for Binary Trees, Techniques for Graphs, Connected Components and Spanning Trees, Biconnected Components and DFS.

Unit-3

Dynamic Programming :- The General Method, Multistage Graphs, All Pairs Shortest Paths, Optimal Binary Search Trees, String Editing, 0/1-Knapsack, Reliability Design, The Travelling Salesperson Problem .

Unit-4

Backtracking :- The General Method, The 8-Queens Problem, Sum of Subsets, Graph Coloring, Hamiltonian cycles, Knapsack problem.

Unit-5

Branch and Bound :- The Method, 0/1-Knapsack problem, Travelling Salesperson.

Lower Bound Theory :- Comparison Trees, Oracles and Adversary arguments, Techniques for Algebraic problems.

Text books:

1. Ellis Horowitz, Sartaz Sahni & Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", Galgotia Publications.

Reference books:

1. Jon Kleinberg, Eva Tardos, "Algorithm Design", Pearson Education.

WEB PROGRAMMING (WP)
(For III B.Tech CSE– II Semester)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Essential HTML: Introduction, Creating and viewing a web page, immediate solutions. Working with Text: Physical and Logical HTML Styles. Presenting and Arranging Text, Working with images. Links and Lists: Creating hyperlinks, Image maps and Lists.

Unit-2

Creating Tables. Working with Frames. HTML Forms and HTML Controls. Dynamic HTML: Dynamic Styles and Dynamic content. Dynamic HTML: Drag and Drop, Data Binding.

Unit-3

Essential XML: valid and well-formed XML documents, XML Document Type Definitions, XML Schemas.

Essential JavaScript: Introduction, JavaScript Objects, Object Properties and Methods, JavaScript Events, JavaScript Programming.

Unit-4

Java Beans: Introduction, what is a Java Bean, Advantages of Java Beans, Developing a simple Bean. Swings: JApplet, Icons and Labels, Text Fields, Buttons, Combo Boxes, Tabbed Panes, Scroll Panes, Tables.

Servlets: Life Cycle of a servlet, A simple Servlet

Unit-5

ASP: what are Active Server Pages, Creating and running ASP, Understanding ASP Scripts. Using Response Object. Using Databases: working with databases using ASP. Reading from a database using ASP. Inserting, updating and deleting database records. Examining the Recordset Object.

Text books:

1. Steven Holzner [Edition: 2005], "HTML Black Book".
2. Patrick Naughton, Herbert Schildt [Third Edition], "The Complete Reference Java2".
3. Scott Mitchell, James Atkinson, "Active Server Pages 3.0", Techmedia.

MICROPROCESSORS AND ASSEMBLY LANGUAGE PROGRAMMING (MALP)
(For III B.Tech CSE – II Semester)

Contact Periods: (4L+1T)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT-1

8085 Microprocessor Architecture: Microprocessor Architecture and its operations, Memory, Input and Output (I/O) devices. 8085 Microprocessor Architecture.

Introduction to 8085 Assembly Language programming: The 8085 programming model.

Instruction classification, Instruction and Data format, Procedure to write Assembly Language Programming. Overview of 8085 instruction set

UNIT-2

Introduction to 8085 Instructions: Data transfer operations, Arithmetic operations, Logical operations, Branch operations.

Programming techniques with Additional Instructions: Programming Techniques Looping, Counting and Indexing. Additional Data transfer and 16 bit arithmetic Instructions, Arithmetic operations related to memory, Logical operations: Rotate & Compare.

UNIT-3

8086 Architecture: CPU Architecture, Internal operation, Machine Language Instructions: Addressing modes, Instruction formats, Instruction execution timing.

Assembler Instruction format, Data transfer Instructions.

Arithmetic Instructions: Binary arithmetic, Packed & unpacked BCD arithmetic
Branch Instructions, Loop Instructions, Logical Instructions, Shift and Rotate Instructions, Directives and operators.

UNIT-4

Linking and Reallocation, Stacks, Procedure, Interrupts and Interrupt routines, Macros. Byte and string manipulation, I/O programming.

UNIT-5

Interfacing devices: Serial communication Interface, 8251 programmable communication Interface (PCI), Parallel communication Interface, 8255 Programmable peripheral Interface (PPI), 8254 Programmable Interval Timer, Keyboard/ Display controller, DMA controller.

Text books:

1) YU-CHENG LIU, GLENN A.GIBSON, "Microcomputer Systems: The 8086/8088 Family", TATA McGRAW-HILL EDITION

2) RAMESH GAONKAR [Fifth Edition], "Microprocessor Architecture, Programming, and Applications with the 8085", PENRAM Publications.

Reference books:

1) Barry B.Brey, "The Intel Microprocessors", Prentice-Hall

2) DOUGLAS V.HALL [SECOND EDITION], "MICROPROCESSORS AND INTERFACING", TATA McGRAW-HILL EDITION.

ADVANCED COMPUTER ARCHITECTURE (ACA) (For IV B.Tech CSE– I Semester)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT-I

Introduction to parallel processing: Trends towards parallel processing, parallelism in uni processor systems, parallel computer structures, architecture classification schemes, parallel processing Applications, memory hierarchy in parallel processing systems, addressing schemes.

UNIT-II

Principles of pipelining: pipeline concept, linear pipelining and space time diagram, classification of pipeline processor, nonlinear pipeline and reservation table, instruction and arithmetic pipelines,

principles of designing pipeline processors-instruction prefetch and branch handling, data buffering and busing structures, internal forwarding and register tagging, hazard detection and resolution, job sequencing and collision prevention. Vector Processing Requirements-characteristics, pipelined vector processing methods. SIMD structures and algorithms for array **processors:** SIMD array processors, organization, masking and routing mechanisms, inter processor communication, SIMD interconnection network, single stage and multistage network, cube network, barrel shifter, shuffle exchange and omega networks, parallel algorithms for array processors(matrix multiplication and parallel sorting)

UNIT-III

Multiprocessor architecture: Loosely coupled and tightly coupled multiprocessor systems, processor characteristics, interconnection network, timeshared or common busses, crossbar switch and multi port memories, multistage network, banyan and delta networks,

parallel memory organization, multiprocessor operating systems, classification and requirements, software requirements for MPS, language features to exploit parallelism, massively parallel processor system(MPS)-architecture, processor array, memory, control.

UNIT-IV

Data flow computers: control flow Vs data flow, data flow computer architectures, static and dynamic data flow computers, data flow graphs and languages, data flow and design alternatives-dependency driven approach and multi level driven approaches-VLSI computing structures-systolic array architecture, reconfigurable processor array.

UNIT-V

Stack computers: stacks, arithmetic evaluation stacks, control stacks, storage for simple and structured variables, the parameter preparation stack combining stacks, evaluation criteria.

Text books:

1. Kai Hwang, Faye Briggs, "Computer architecture and parallel processing", MC GRAW HILL.
2. Stone Harods, "Introduction to computer architecture",Galgotia.

Reference books:

1. Kai Hwang, "Advanced computer architecture", MC GRAW HILL.

OBJECT ORIENTED MODELLING AND DESIGN (OOMB) (For IV B.Tech CSE – I Semester)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT I

Object Oriented System development –Introduction, Overview of the unified approach. Object basics – Objects, classes, state and properties, behavior and methods, messages, encapsulation, class hierarchy, polymorphism relationships and associations ,aggregation and containment ,object identity ,static and dynamic binding ,persistence ,meta –classes. Object Oriented System life cycle – Analysis, Design .Prototyping, Implementation, component based development.

UNIT II

Object oriented methodologies –OMT, Booch methodology, Jacobson methodology, Patterns, Unified approach, Layered approach. UML –Introduction, UML class diagrams, Use – case diagram, Interaction diagram, sequence diagram, Collaboration diagram, State chart diagram, Activity diagram, component diagram, deployment diagram, packages. UML extensibility –Model constraints, note, stereotype, UML Meta model.

UNIT III

Object oriented Analysis: Introduction, business object analysis, use-case modeling, developing effective documentation, case studies. Object Analysis: classification theory, Noun Phrase approach, use-case driven approach, classes, responsibilities and collaborators, naming classes. Object Relationships, attributes and methods –Associations, super and subclass relationships, A-part-of relationship, class responsibilities, defining attributes, Object responsibility: Methods and messages, case studies.

UNIT IV

Object oriented design process and design axioms –corollaries, design patterns. Designing classes – Introduction, philosophy, class visibility, refining attributes, designing methods and protocols, case studies. Access Layer – Object store and persistence, DBMS, logical and physical database organizations and access control, client-server computing, distributed objects computing, objects computing, object –relational systems, multi database systems, designing access layer classes, case studies.

UNIT V

View Layer –user interface design, designing view layer classes. Macro-level process, micro - level process, UI design rules, view layer interface, prototyping, case- studies. Software Quality Assurance – Quality Assurance tests, Testing strategies, Impact of object-oriented testing, test cases, test plan, continuous testing, Myer's debugging principles, case studies. System usability and measuring user satisfaction –Introduction, usability testing, user satisfaction test, user satisfaction test template, case study, documentation template.

Text Books:-

1. Jason T. Roff, "UML a Beginner's Guide", TATA McGraw- Hill.
2. Ali Bahrami – Irwin [1999], "Object Oriented systems development", McGraw

Reference:-

1. Atul Kahate, "Object Oriented Analysis and Design", The Mc Graw-Hill

**DATA WAREHOUSING & MINING (DWM)
(For IV B.Tech CSE– I Semester)**

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction, Delivery Process, System Process – Process flow, Extraction and Loading of Data, Clean and Transform Data, Backup and Query Management process.
Process Architecture – Various types of Managers and information.

Unit-2

Data Warehousing Components, Building a Data Warehouse and Mapping it to Multiprocessor Architecture

Unit-3

DBMS Schemas for Decision Support, Data Extraction, Cleanup and Transformation Tools, MetaData.

Unit-4

Reporting and Query Tools, OLAP – Need Guidelines, Categorization, Patterns and Models – Where and What of a Model, Sampling, Experimental Design

Unit-5

Data Mining: Introduction, Decision Trees – What and where How of Decision Trees, Nearest Neighbour and Clustering, General Idea. Case Studies.

Text books:

1. Sam Anahory, Dennis Murray, "Data Warehousing in the Real World", Pearson Education.
2. Alex Berson, Stephen J. Smith, "Data Warehousing, Data Mining & OLAP", TMH

Reference books:

1. Jiawei Han, Micheline Kamber, Elsevier, "Data Mining concepts and techniques".
2. Margaret H. Dunham, S. Sridhar, "Data Mining Introductory and Advanced Topics", Pearson Education.

ENTREPRENEURSHIP DEVELOPMENT (ED)
(For IV B.Tech CSE– I Semester)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit - I

Introduction : Concept of an entrepreneur; Definition of an entrepreneur; Types of entrepreneurs; Characteristics of an entrepreneur.

Entrepreneurship : Definitions; Theories of entrepreneurship; Key elements of entrepreneurship; Six important segments of entrepreneurship environment; Advantages of entrepreneurship; Barriers to entrepreneurship; Role of entrepreneurship in economic development.

Unit – II

Rural Entrepreneurship : Meaning; Need; Retrospection of rural industrialization in India; Problems of rural entrepreneurship; Development plan for rural entrepreneurship.

Small Enterprises : Definition of SSI; Types, Characteristics of SSI; Role of SSI in economic development; Problems faced by SSI.

Unit – III

Project Planning : Project Identification; Project Selection; Project Report – Contents & Formulation; Methods of Project Appraisal.

Ownership Structures : Sole Proprietorship; Partnership; Company; Co-operative; Selection of appropriate ownership structure.

Unit – IV

Institutional Finance : Commercial banks; Other Financial Institutions – IDBI, IFCI, ICICI, IRBI, SFC, SIDC, SIDBI & EXIM Bank.

Institutional Support : Need; Support to Small Entrepreneurs – NSIC, SIDO, SSIB, SSIDC, SISI, DICs.

Text Books :

1. Prof. Satish C. Ailawadi & Mrs. Romy Banerjee, "Principles of Entrepreneurship", Everest Publishing House Pub.
2. S.S. Khanka, "Entrepreneurial Development", S. Chand & Company Ltd. Pub.

ELECTIVES

REAL TIME SYSTEMS (RTS) (Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 hrs

Sessional Exam Marks : 30
End Exam Marks: 70

UNIT - I

Time Handling - Representation of Time - Time Constraints - Time Service and Synchronization - Master-Slave Algorithms - Distributed Clock Algorithms.
Objects - Basic concepts - Requirements for Exceptions - Guarantees in Hard Real - Time Systems. Adding Time to Objects: Temporal Relations - Calendars.

UNIT - II

The Real-Time System Life Cycle - Requirements Specification - State chars. Structured Design Approaches - Event-based Model - Process-Based Structured Design

UNIT - III

Language Support Restrictions - Real-Time Programming Discipline - Real-Time Programming Languages Schedulability Analysis. Verification and Validation of Real-Time Software - Testing Real-Time Properties - Simulation as Verification Tool - Testing Control and Data Flow - Proof Systems -Operational Approach.

UNIT -IV

Properties of Real-Time Operating Systems - Current Operating Systems - Resource Management/Allocation - Time Services - Communication - Name Servers - Data Access Strategy - Fault Tolerance - Other Services. Allocating and Scheduling - Problem Definition - Rate Monotonic Priority Scheduling Algorithms Next-Fit-M partitioning for Rate monotonic Schedulers - Allocation with Minimization of IPC - Allocation with Bottleneck Processor Load Minimization - Allocation with Load Balance Optimality Constraint - Serving Non-Real-Time Tasks by a Real-Time Scheduler Heuristic Approach in Scheduling - Imposing Precedence and Resource Requirements. Verification of Schedulability - Feasible Schedule Conditions - Algorithms Principles - The Verification Algorithm for Convex Constraint - The verification Algorithm for Convex Constraint - The verification Algorithm for Non-Convex Constraint.Resource Allocation - Definitions and Formulation - Allocation Algorithm - Allocation Algorithm Properties - Reallocation upon Failure.

UNIT - V

The Maruti Operating System: Introduction - Maruti Components Operational Issues and Examples - Execution and Distribution Considerations - Job Acceptance in Maruti - Some Examples of Design.

Text Book:

1. Shem, Tov Levi, Ashok K.Agarwal, " Real Time System Design",MgH IST.

Reference Books:

1. S.T.Allworth and R.N.Zobel, " Introduction to Real time software design",
McMillan Education Ltd;

ARTIFICIAL INTELLIGENCE (AI) (Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT- I

What is Artificial Intelligence? - The AI problems, the underlying Assumption, What is an AI Technique? The level of the model, Criteria for success, Problems, problem spaces, and search - defining the problem as a state space search, production systems, problem characteristics, production system characteristics, issues in the design of search programs.

UNIT - II

HEURISTIC SEARCH TECHNIQUES - Generate and test- travelling sales man problem, Hill climbing, Best first search, problem reduction, constraint satisfaction, Mean ends analysis

UNIT - III

KNOWLEDGE REPRESENTATION - Representations and mappings, approaches to knowledge representation, The Frame Problem. Using Predicate logic - Representing simple facts in logic, Representing Instance and Isa relationships, Resolution.

REPRESENTING KNOWLEDGE USING RULES - Procedural versus declarative knowledge, logic programming, forward versus backward reasoning, matching.

UNIT - IV

WEAK SLOT AND FILLER STRUCTURES - Semantic nets, Frames.

STRONG SLOT AND FILLER STRUCTURES - Conceptual dependency, scripts, CYC

GAME PLAYING - MIN MAX search procedure, Adding Alpha Beta cutoffs.

UNIT - V

Learning – Learning from Observations – Forms – inductive - Learning Decision Trees, Ensemble Learning, Knowledge in Learning – A Logical Formulation of Learning, Knowledge in Learning, EBL, Learning Using Relevance information, Inductive Logic Learning, Passive Active and Generalization in Reinforcement Learning. case studies : MYCIN, PROSPECTOR, XCON.

TEXT BOOKS:

1. Elaine Richie Kevin Knight, "Artificial Intelligence", TMH.
2. Stuart Russell, Peter Norvig, "Artificial Intelligence A Modern Approach", Pearson Education.

SOFTWARE QUALITY & TESTING (SQT)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Software quality, quality management, software quality metrics, product quality metrics, In-process quality metrics, metrics for software quality maintenance, Examples.

Unit-2

Quality tools in software development, seven basic tools, check list, pareto diagram, histogram, run charts, scatter diagram, control chart, cause and effect diagram, defect removal, defect removal effectiveness, quality planning, cost effectiveness of phase defect removal.

Unit-3

Reliability growth models, model assumptions, criteria for model evaluation, modeling process, test compression factor, the Raleigh model frame work, PTR sub model, reliability growth models, criteria for model evaluation, metrics, and reports, ISO 9000 and CMM.

Unit-4

Software testing, Software faults and failures, Testing issues, Unit testing, integration testing, testing object oriented systems, test planning, Automated testing tools, Example system testing, principles, Function and performance testing, Reliability, availability and maintainability, Acceptance testing, installation testing, automated system testing, test documentation, safety critical systems, Example.

Unit-5

System delivery, Training, documentation, information systems.

Software maintenance: The changing system, nature of maintenance and problems, Maintenance techniques and tools, software rejuvenation.

Textbooks:

1. Stephen H. Khan [1995], "Metrics and Models in Software Quality Engineering", Addison Wesley publishing Co.,.
2. Shari Lawrence Pfleeger[1998], "Software Engineering Theory and Practice", Prentice Hall, Inc.
3. Srinivasan.D, Gopaldaswamy.R [2006], "Software Testing", Pearson Education.

CLIENT SERVER COMPUTING (CSC)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

What is client/server computing, Benefits of client/server computing, Evolution of client/server computing. Hardware Trends, Software Trends, components of client/server applications, classes of client/server applications, categories of client/server applications. Understanding of client/server computing : Dispelling the Myths, Obstacles – Upfront and hidden, open systems and standards – settings, organizations, factors for success.

Unit - 2

Client Hardware & Software: - Client components, client operating systems, what is GUI?, X- Windows versus Windowing, Database access, application logic, client software products: GUI environments, converting 3270/5250 screens, database access tools.
Client Requirements : GUI design standards , open GUI standards, Interface independence, Testing interfaces, Developments aids.

Unit-3

Server Hardware: - Bench marks, categories of servers, features of server machines, classes of server machines, Eight layers of software , Network management environment Network computing environment, extensions, network operating system, loadable modules, server operating systems: OS/2 2.0, windows new technology, Unix based operating systems.

Unit-4

Server Requirements: - Platform independence, transaction processing, collectivity, intelligent database, stored procedures, triggers, load leveling, optimizer, testing and diagnostic tools, reliability, backup and recovery mechanisms, server data management and access tools: Data manager features. Data management software, database gateways, overview of networking, LAN hardware, network operating systems.

Unit-5

Development & Development Methodology: - Convert existing screen interfaces COBOL to COBOL migration, reengineering existing applications, business reengineering, methodology tools, application development environments, distributed transaction management, integrating multi vendor environments, production requirements, mobile computing, more Robust servers, integration of network and server operating systems, use of object technologies, ATM switching.

Text Book:

1. Dawna Travis Dewire „James Martin,“ Client/Server computing“McGraw-HILL PRODUCTIVITY SERIES.

MOBILE COMMUNICATION (MC)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction to wireless communication, Wireless transmission

Unit-2

Medium access control: Motivation for a Specialized MAC, SDMA, FDMA, TDMA-Fixed TDM, Classical Aloha, Slotted Aloha, CSMA, Demand assigned multiple access, PRMA packet reservation multiple access, multiple access with collision avoidance, Polling. CDMA, Comparison of S/T/F/CDMA.

Unit-3

Telecommunications System: GSM-Mobile Services, System Architecture, Radio interface, Protocols, Localization and calling, Handover, Security. DECT, TETRA

Unit-4

Wireless LAN: Infrared Vs Radio Transmission, Infra Red and ad-hoc network, IEEE 802.11, HIPERLAN, Bluetooth.

Unit-5

Mobile Network Layer: Mobile IP, Dynamic host Configuration protocol. Mobile Transport Layer: Traditional TCP, Classical TCP improvements.

Textbooks:

1. Jochen Schiller[Second Edition], "Mobile Communications", Low price edition Pearson Education

Reference books:

1. Talukder, "Mobile Computing: Technology, Applications & service creation", TMH.

MANAGEMENT INFORMATION SYSTEMS (MIS)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT - I

INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS: - An overview and structure of management information system, Hardware, software, and communications technology for information systems, storage and retrieval of data, transaction processing, office automation.

UNIT - II

The decision making process, system concepts-Types of systems, subsystems, preventing system entropy, concepts of planning and control.
Organizational structure and management concepts-The basic model and modifications of organizational structure, organizational culture and power, organizational change and management theories.

UNIT - III

support systems for planning, control, and decision making, support systems for management of knowledge work.

UNIT - IV

Developing a long range information system plan, strategies for the determination of information requirements, database requirements, user interface requirements.

UNIT - V

Developing and Implementing application systems, quality assurance and evaluation of information systems, organization and management of the information resources function.

TEXT BOOKS:

1. Gordon B.Davis and Margrethe H.Olson, " MANAGEMENT INFORMATION SYSTEMS"

COMPUTER SIMULATION & MODELLING (CSM)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT-1

Introduction to computer simulation: Definition, types of models, characteristics of mathematical Model, basic concepts and terminology, simple simulation model, Uses of simulation, life cycle of simulation model, applications of Simulation.

UNIT-2

Monte carlo inventory simulation: Basic inventory concepts, fixed order quantity model, monte carlo Inventory model.

Random number generation: Properties, methods for generating random numbers, digital computer Methods, statistical tests for randomness, testing random numbers from The IBM pc versions of basic.

UNIT-3

Simulating queuing models: Basic terminology, simple queuing system, approaches to queuing Problems, important characteristics of queuing system, simulating Tool crib operation.

Special purpose simulation languages: Advantages & disadvantages of simulation languages, selection Criteria of simulation language, simulation languages: GPSS, SLAM, GEMS, SIMSCRIPT, IFPS, current trends in simulation Languages.

UNIT-4

General purpose simulation system(GPSS):Introduction, elementary concepts in GPSS, storage and some Sna's, simulation of a toy robot, an orderly service canteen, gates Logic switches and tubes, variables, select and count, GPSS features.

UNIT-5

Simulation using GPSS: Block diagrams, stopping simulation, preparing program, program Output, parallel servers, negative exponential processes, controlling Model.

Simulation using SLAM: SLAM network, simple example, SLAM structures, SLAM output.

Simulation using GEMS: Simple model, interactive input model, defining statistics, histogram, global variables, converting the model to an input data set, Advanced GEMS features.

Text books:

1. Hugh j.Watson,John h.blackstone(jr)[II edition],” Computer simulation, Wiley publications.
2. KRV Subramanian & sundaresan, ”System simulation (CBS publications, for unit-4)

NETWORK SECURITY AND CRYPTOGRAPHY (NSC)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Overview : Services, Mechanisms and Attack, The OSI Security Architecture, A model for Network Security.

Classical Encryption Techniques : Symmetric Cipher Model, Substitution Techniques, Transposition Techniques

Unit-2

Block Ciphers and the Data Encryption Standard: Simplified DES, Block Cipher Principles, The DES, The Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher modes of Operation

Unit-3

Public Key Cryptography and RSA: Principles of Public Key Cryptosystems, The RSA Algorithm. Key Management: Key Management, Diffie – Hellman Key Exchange

Unit-4

Message Authentication and Hash Functions : Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs, Hash Algorithms : MD5 Message Digest Algorithm, Secure Hash algorithm.

Unit-5

Digital Signatures and Authentication Protocols: Digital Signatures, Authentication Protocols, Digital Signature Standard, Authentication Applications: Kerberos, X.509 Authentication Service

Text Books:

1. William Stallings [Third Edition], "Cryptography and Network Security: Principles and Practices", Low Price Edition, Pearson Education

Reference books:

1. William Stallings, "Network Security Essentials (Applications and Standards)", Pearson Education.

INTER NET PROTOCOLS (INP)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT I

Internet administration and standards, The OSI model and TCP/IP Protocol Suite, Underlying Technologies.

UNIT II

IP Addressing, Subnetting and supernetting, Delivery and Routing of IP packets, routing protocols (RIP, OSPF & BGP).

UNIT III

Internet Protocol (IP), ARP & RARP, Internet Control Message Protocol (ICMP), Internet Group Management Protocol (IGMP).

UNIT IV

User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Domain Name System (DNS).

UNIT V

Telnet & Rlogin, File Transfer Protocol (FTP), TFTP, Simple Mail Transfer Protocol (SMTP), Simple Network Management Protocol (SNMP), Hyper Text Transfer Protocol (HTTP).

Text Books:

1. Behrouz A. Forouzan, "TCP/IP Protocol Suite", Tata McGraw Hill
2. W.Richard Stevens, G.Gabrani , "TCP/IP Illustrated, The Protocols", Pearson Education.

MULTIMEDIA APPLICATIONS (MMA)
(Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 Hrs

Sessional Exam Marks: 30
End Exam Marks: 70

Unit-1

Introduction: - Branch overlapping aspects of Multimedia, Global Structure, Multimedia literature. **Multimedia:** Media and Data Streams: - Medium, Main properties of Multimedia system, Multimedia, Traditional Data Streams Characteristics, Data Stream Characteristics for continuous media. **Sound/Audio:** - Basic Sound Concepts, Music, Speech.

Unit-2

Images and Graphics: - Basic Concepts, Computer Image Processing.
Video and Animation: - Basic Concepts, Television, Computer based Animation.

Unit-3

Data Compression: - Storage Space, Coding Requirements, Source, Entropy and Hybrid Coding, Some Basic Compression Techniques, JPEG, H.26 (P*64), MPEG, DVI.

Unit-4

Optical Storage Media :- History, Basic technology, Video Disks and other WORMs, Compact Disk Digital Audio, Compact Disk Read Only Memory, CDROM Extended Architecture, Further CD- ROM based developments, Compact Disk Write Once , Compact Disk magneto Optical, Prospects of CD Technologies.

Computer Technology: - Communication Architecture, Multimedia Workstation.

Unit-5

Documents, Hypertext and MHEG :- Documents, Hypertext and Hypermedia, Document Architecture SGML, Document Architecture ODA, MHEG.

TEXT BOOK:

1. Ralf Steinmetz and Klara Nhrsedt, "Multimedia: Computing, Communications and Applications", Pearson Education Asia.

IMAGE PROCESSING (IP) (Elective for IV B.Tech CSE)

Contact Periods: (4L)/week
End Exam: 3 hrs

Sessional Exam Marks: 30
End Exam Marks: 70

UNIT I

Introduction to image processing: Representation of images, basic Image Processing System. Two dimensional Systems: Two-dimensional signals, Some Useful 2-D LSI Systems, Determining the Impulse Response from the Frequency Response. Two Dimensional Finite Impulse-Response (FIR) Filters: The Z -Transform, Two-Dimensional FIR Filters, Software Implementation of 2-D FIR Filters, Displaying Images.

UNIT II

IMAGE ENHANCEMENT: The illumination-Reflectance Model, Homomorphic Filtering, Phase-Contrast Filtering, Histogram Modification, Median Filtering.
EDGE ENHANCEMENT AND DETECTION: Edge Enhancement Through FIR Filters, Edge Extraction Through Spatial Approaches.

UNIT III

THE DISCRETE FOURIER TRANSFORM: One- Dimensional Fourier Transform, Fast Fourier Transform Algorithms, Two-Dimensional FFT, Displaying the FFT, Two-Dimensional Filtering using the FFT, Vector-Radix FFT.
PROPERTIES OF DIGITAL IMAGES: The Whittaker-Shannon Sampling Theorem, The Sampling Theorem when applied to images, Doubling Image Resolution, Wallis Statistical Differencing Filter.

UNIT IV

DESIGN OF 2-D FIR FILTERS USING FFT AND WINDOW FUNCTIONS:
Design of FIR Filters using FFT, Window Functions, Doubling the Resolution of an Image.
TWO-DIMENSIONAL INFINITE IMPULSE RESPONSE FILTERS:
The IIR Filters, Shank's Method, Generating the Impulse Response, Designing the IIR Filter, The Iterative Approach, Filtering Images using IIR Filters, Doubling Image Resolution using IIR Filters.

UNIT V

IMAGE RESTORATION: PSFs For Different Forms of Blurs, Estimating the Extent of the Blur, The OTF, A Procedure for Restoration, Restoration through Local Operators, Restoration using similar Images.
COLOR IMAGE PROCESSING: Color Fundamentals, Color Images, Generating the Chromatically Diagram for 15-bit and 8-bit Color Systems, Displaying Color Images on 15 bit and 8-bit Color Systems, The Luminance Signal, Filtering Color Images, Selective Color -Tone Adjustment and Filtering.

Text Books:

1. M.A.SID-AHMED, "Image Processing".

Reference:

1. Anil K.Jain, "Fundamentals of Digital Image Processing"
