

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN
SYLLABUS OF INFORMATION TECHNOLOGY

Teaching and Examination Scheme

B.E. FIRST YEAR (CE/IT/EC/MC/BM)

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Pract	Total	Theory		Pract. Marks	Term work Marks	Total
					Hrs	Marks			
101	Mathematics 1 & 2	4	-	4	4	100	-	-	100
102	Elements of Civil Engg. & Mech. Engg. (Including Workshop)	2	4	6	3	100	-	100	200
103	Elements of Engg. Mechanics	2	1	3	3	100	-	25	125
104	Material Science	2	-	2	3	100	-	-	100
105	Fundamentals of Electrical Engg. & Electronics	2	1	3	3	100	-	25	125
106	Engineering Graphics	2	2	4	4	100		50	150
107	Introductory Course in Computer	2	4	6	3	100	50	50	200
108	Communication Skills	2	-	2	2	50	-	-	50
<i>Total Contact Hours</i>		18	12	30	<i>Grand Total</i>				1050

SEMESTER – III

Subject Code	Subject Name	Teaching Scheme		Examination Scheme				Total Marks
		Lect. Hrs	Pract. Hrs	Theory Marks	Paper Hrs	Pract/ Oral Scheme	Term work Marks	
IT301	Mathematics III	4	-	100	3	-	-	100
IT302	Communication Systems- I	3	2	100	3	25	25	150
IT303	Computer System Architecture -I	3	2	100	3	25	25	150
IT304	Object Oriented Programming	3	2	100	3	25	25	150
IT305	Digital Electronics & Microprocessors	4	2	100	3	25	25	150
IT306	Computer Oriented Numerical Methods	3	2	100	3	25	25	150
		20	10	500		150	150	850

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SEMESTER – IV

Subject Code	Subject Name	Teaching Scheme		Examination Scheme				Total Marks
		Lect. Hrs	Pract. Hrs	Theory Marks	Paper Hrs	Pract/Oral Scheme	Term work Marks	
IT401	Discrete Mathematics	3	-	100	3	-	-	100
IT402	Management Information System	3	2	100	3	50	50 (seminar)	200
IT403	Data Structures and Algorithms	4	2	100	3	25	25	150
IT404	Communication Systems- II	4	2	100	3	25	25	150
IT405	Computer System Architecture -II	4	2	100	3	25	25	150
IT406	Operation Research, Simulation & Modeling	4	0	100	3	-	-	100
		22	8	600		125	125	850

SEMESTER – V

Subject Code	Subject Name	Teaching Scheme		Examination Scheme				Total Marks
		Lect. Hrs	Pract. Hrs	Theory Marks	Paper Hrs	Pract/Oral Scheme	Termwork Marks	
IT501	Database Management Systems	4	2	100	3	25	25	150
IT502	Computer Networks	4	2	100	3	25	25	150
IT503	Computer Graphics	4	2	100	3	25	25	150
IT504	SYSTEM ANALYSIS & DESIGN	4		100	3			100
IT505	Operating Systems	4	2	100	3	25	25	150
IT506	Technical Seminar & Report		2	-	-	25	25 (seminar)	50
		20	10	500		125	125	750

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SEMESTER – VI

Subject Code	Subject Name	Teaching Scheme		Examination Scheme				Total Marks
		Lect. Hrs	Pract. Hrs	Theory Marks	Paper Hrs	Pract/Oral Scheme	Termwork Marks	
IT601	Economics & Management	3		100	3			100
IT602	Elective –I	4	2	100	3	25	25	150
IT603	Advanced DBMS	3	2	100	3	25	25	150
IT604	GUI Design and Programming	3	2	100	3	25	25	150
IT605	OBJECT ORIENTED ANALYSIS & DESIGN	3	2	100	3	25	25	150
IT606	Elective –II	4	2	100	3	25	25	150
		20	10	600		125	125	850

IT 602 – ELECTIVE – I (Any One From the Following Subjects)

1. Real-time Operating System
2. Digital Signal Processing

IT 606 ELECTIVE – II (Any One From the Following Subjects)

1. Wireless communication & Mobile Computing
2. Web Technology & Programming

SEMESTER – VII

Subject Code	Subject Name	Teaching Scheme		Examination Scheme				Total Marks
		Lect. Hrs	Pract. Hrs	Theory Marks	Paper Hrs	Pract/Oral Scheme	Termwork Marks	
IT701	Parallel Processing	3	2	100	3	25	25	150
IT702	Software Engineering	3	1 Tutorial	100	3	-	25	125
IT703	Distributed Operating Systems	3	2	100	3	25	25	150
IT704	ERP-SCM-CRM	3	1 Tutorial	100	3	-	25	125
IT705	Elective III	4	2	100	3	25	25	150
IT706	Elective IV	4	2	100	3	25	25	150
		20	10	600		100	150	850

Elective III :

1. Data Compression and Security
2. Formal Language and Automata Theory

Elective IV:

1. Artificial Intelligence & Expert System
2. Data warehousing and data mining

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SEMESTER – VIII

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Practica I	Total	Theory		Pract. Marks	TW Marks	Total
					Hrs	Marks			
IT801	Project and Seminar								
	(a) Continuous Assessment	-	06	06	-	-	100	-	100
	(b) Project	-	24	24	-	-	200	100	300
Total Contact Hours		-	30	30	Grand Total				400

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B.E. FIRST YEAR (EC, IT, CE, MC, BM)

101: ENGINEERING MATHEMATICS – I & II

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	-	4	100	-	-	100

* **DIFFERENTIAL CALCULUS:**

- (a) Successive differentiation, Leibnitz Theorem, Taylor's & Maclaurin's expansions, Indeterminate forms.
- (b) Partial differentiation - Partial and total differential coefficient, Eulers Theorem, Transformations, Geometrical interpretation of partial derivatives, Tangent plane and Normal line, Jacobians, Taylors expansion for two variables, Errors and approximations, Maxima and Minima of functions of two variables, Lagrange's method of undetermined multiple's to determine stationary values.

* **INTEGRAL CALCULUS:**

- (a) Reduction formulae, Beta - Gamma & Error functions, Elliptic functions.
- (b) Application of integration - Area of a bounded region, Length of a curve, Volume & surface area of a solid of revolution for Cartesian, parametric & polar curves.
- (c) Multiple integrals: Double integral, change of order of integration, transformation of variables by Jacobean only for double integration, change to polar co-ordinates in double integrals only, Triple integral, Application of multiple integration to find areas, volumes, C.G., M.I. and mean values.

* **COMPLEX NUMBERS:** DeMoivres Theorem & its applications, functions of complex variables-exponential, hyperbolic & inverse hyperbolic, trigonometric & logarithmic

* **INFINITE SERIES:** Definition, Comparison test, Cauche's integral test, ratio test, root-test, Leibnitz rule for alternating series, power series, range of convergence, uniform convergence.

* **MATRIX ALGEBRA:** Elementary transformations & rank, inverse by elementary transformation, normal form of a matrix, consistency of system of linear equations, solution of systems of equations, Linear dependent vectors in R³, Linear & orthogonal transformations, Eigen values and Eigen vectors.

* **DIFFERENTIAL EQUATIONS & MODELLING:** Modeling of engineering system (leading to ODE of first order, first degree, including orthogonal trajectories). Exact differential equations and integrating factors, unified approach to solve first order equations, Linear, Reducible to linear, Applications including modeling, solution of first order and higher degree differential equations (clairut's equation only).

* **REFERENCE BOOKS:**

1. Elementary Engineering Mathematics by Dr.B.S.Grewal.
2. Higher Engineering Mathematics by Dr.B.S.Grewal.
3. Engineering Mathematics - I. by P.N. & J.N.Wartikar.
4. Engineering Mathematics - I & II. by G.V.Kumbhojkar.

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102: ELEMENTS OF CIVIL ENGINEERING & MECHANICAL ENGINEERING

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	4	3	100	-	100	200

* **CIVIL ENGINEERING:**

1. Elements of Surveying: Surveying and leveling, definition, geodetic survey and plane survey, scale plans and maps, chain survey, Traversé survey, compass traverse survey. Leveling: General terms used in leveling. Method of leveling contour survey, Area measurement by planimeter.
2. Elements of Water Resources Development: Elementary hydrology water requirement and its conservation.
3. Elements of Environmental Protection: Environment and Ecosystem, Water quality criteria, Domestic and Industrial wastes and treatment, Air and energy relates pollution.

* **MECHANICAL ENGINEERING:**

1. Engineering Drives: Fundamentals of belt, rope and chain drives, gears and gear trains, reciprocating and intermittent drives, bearing, clutches and brakes.
2. Internal Combustion Engines: Classification, Working of petrol and diesel engines, Performance and characteristics.
3. Steam Generators: Fire tube, water tube and package boilers, boiler mountings and accessories.
4. Introduction to steam and gas turbines, condensers, air-compressors and vacuum pumps.
5. Introduction to refrigeration and air conditioning systems.
 - (a) Introduction/ Demonstration; should be given for each of following shops/trade which include importance of the shop/trade in the engineering. New materials available tools/equipments required indicating the use of each tool/equipment. Method of processing any special machines, power required etc.
 - (1) Joining Processes
 - (2) Sheet metal work
 - (3) Plumbing (Metallic and Non-metallic pipefitting)
 - (4) Electroplating
 - (5) Metal cladding and painting
 - (6) Manufacture of plastic products.
 - (7) Metal machining-Turning, drilling, grinding etc.
 - (b) Exercise and Term work: Each student is required to prepare simple exercises in the following so as to have a feel of how the jobs/parts are prepared and use of tools/equipments (Any four)
 - (1) Electroplating - 1 No.
 - (2) Painting and metal cladding - 1 No.
 - (3) Sheet Metal work - 1 No.
 - (4) Plumbing- 1 No./ Fitting - 1 No.
 - (5) Arc Welding/ Gas Welding/ Welding - 1 No.
 - (6) Soldering/ Brazing - 1 No.
 - (7) Drilling practice - 1 No.

Over and above these exercises, each student is required to prepare a laboratory report on instruction/ demonstration and exercises prepared by him as a part of term-work of as above.

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- * Paper to be divided in two parts.
 - (1) Civil Engg. - 50 Marks
 - (2) Mech. Engg - 50 Marks

- * Term-work marks to be distributed as:
 - Civil Engg. - 25 Marks
 - Mech. Engg. - 25 Marks
 - W/S Practice - 50 Marks

- * Text Books:

1. Surveying vol-1 By B.C.Punmia.
2. Basic Civil Engg. By P.D.Deshpande
3. Elements of heat engine By R.C.Patel
4. Elements of heat engine By N.C.Pandya & C.S.Shah
5. Basic Engineering thermodynamics By Rayner Joel.
6. Elements of Mechanical Engineering By S.B.Mathur and D.Domkundwar
7. Irrigation and Hydrology By B.C. Punmia
8. Water supply Engineering By S.K. Garg

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103: ELEMENTS OF ENGINEERING MECHANICS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	1	3	100	-	25	125

1. Introduction: Scalar and vector quantities, composition and resolution of vectors, definition and units of space, time, matter and force, the science of mechanics, SI units.
2. Statics: Principles of statics, particle, rigid body, coplanar, concurrent and non-current, parallel and non-parallel forces, composition and resolution of forces, equilibrant, equilibrium, free body diagrams, Analytical and graphical conditions of equilibrium for coplanar force system.
3. Moment of Inertia: Centre of gravity of lines, plane areas, volumes and bodies, Pappus Guldinus theorem.
4. Friction: Theory of friction, static and sliding friction, Law of friction, angle and co-efficient of friction, inclined plane friction, ladder friction, wedges, belt and rope friction, screw friction.
5. Kinematics: Relative velocity, circular motion, constant and variable angular acceleration, relation between linear and angular acceleration, dependent motion, simple harmonic motion of rigid bodies, instantaneous center, introduction to simple cases of single degree free vibration.
6. Kinetics: Mass inertia, Newton's law of motion, De-Alembert's principle, force, absolute and derived units, gravitational force, engineer's units, constant and variable forces, motion of connected bodies, motion along Inclined planes, momentum and impulse, work, energy-kinetic and potential, conservation of energy, power, conservation and momentum impact, torque, angular acceleration, energy of rotating bodies, flywheel and its function, angular momentum.
7. Simple Machines: Velocity ratio, mechanical advantage, efficiency, simple machine such as levers, inclined planes, pulley and pulley blocks, worm and compound screw jack etc., reversibility of machine.
8. Strength and Elasticity: Stresses (Axial, Normal, in plane, tensile, compressive, shear).
9. Elasticity: Elastic, homogeneous, isotropic, orthographic materials, limits of elasticity and proportionality, yield limit, ultimate strength, plastic state, proof stress, factor of safety, working stress, load factor.
10. Mechanical Properties of Materials: Metals, Ductility, Brittleness, Toughness, Malleability behavior of ferrous and non-ferrous metals in tension and compression, Fatigue strength, endurance limit, Creep of metals.

* Text Books:

1. Strength of materials By S.Ramamrutham and R.Narayan.
2. Engg. Mechanics. By A.K.Tayal.
3. Engg. Mechanics By P.J.Shah.

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104: MATERIAL SCIENCE

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	-	3	100	-	-	100

1. Introduction to Material Science: Importance, Engineering requirement of materials, important properties of engineering materials, type.
2. Crystal Geometry: Atoms and atomic co-ordination, atomic structure, bonds in solids, crystal structure, Space lattice, unit cell, crystal systems, atomic packing, co-ordination number, crystal structure for metallic elements, crystal direction and planes, miller indices, inter-planer spacing, Bragg's law, X-ray diffraction.
3. Crystal Imperfections: Types, Frank-read source, Dislocations, Geometry and effect of dislocations, ordered & disordered structures, Stacking sequences & faults.
4. Metals: Ferrous metals - types, non-ferrous metals, alloys, composition, properties & uses of metals and alloys.
5. Corrosion: Types, factors, Mechanism and control.
6. Miscellaneous Engineering Materials: Introduction to HDPE, LDPE, thermoses, foam, resins, Teflon, PUF, glass wool, fiber glass, acrylic, silicon chips, fern, magnetic tapes, solar cells, neoprene, polyurethane, polyester fibers, high tensile steel etc. general and specific applications.
7. Conductive Materials: Electrical conductivity, Free electron theory of metals, relaxation time, collision time and mean free path, Joule's law, factors affecting resistivity of conducting materials, Electrical conductivity of pure & impure metals, Thermal conductivity of metals, Conductor materials, High conductive & resistive materials, carbon & graphite, fuses, superconductivity.
8. Magnetic Materials: Magnetic properties, Classification of magnetic materials, field theory, diamagnetism, paramagnetic, Ferromagnetism, dipole moment, Ferromagnetic behavior at high & low temperature, Spontaneous magnetization, Magnetic anisotropy, Magnetostriction, Antiferromagnetism, Ferrites, Soft magnetic materials, hard magnetic materials, applications of magnetic materials.
9. Insulators: Dielectric gases, Liquid & Solid insulating materials, Films, Electrical Insulations, Insulating materials for electrical devices, Insulation measurements, Electrical strength, Factors affecting characteristics of insulating systems and effect of moisture.
10. Semiconductors: Energy bands, Bonds in semiconductors, Intrinsic & Extrinsic semiconductors, Hall effect, Drift & Diffusion mechanism for current flow, Semiconductor materials - properties, applications.
11. Optical properties of Materials: Light, Electromagnetic spectrum of visible radiation, Optical properties, Refractive Index, Birefringeness, dispersion, absorption, Excitons, Reflections, Phot-electri emission, photoconductivity, Materials for photo-voltaic cells, Luminescence, Lasers.

* Books:

1. Elements of material science by Van Vlack
2. Material science & processes by Zha & Zha
3. Material science & processes by R.B.Gupta
4. Material science & processes by Narula & Narula & Gupta
5. Material science & processes by Hajra Chaudhari
6. A course in Electrical Engineering Materials by Seth & Gupta

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105: ELEMENTS OF ELECTRICAL ENGINEERING AND ELECTRONICS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	1	3	100	-	25	125

1. D.C. Circuit: Effect of temp on resistance, Solution of D.C. circuit including series, parallel and star-delta combination of resistance. Application of Kirchhoff's law (KVL and KCL). Use of Thevenin's, Norton's, Superposition theorem for D.C. circuit.
2. Work, Power and Energy: Work, power and energy relationship in electrical, thermal and mechanical system units.
3. Capacitor: Types of capacitor, Series, Parallel combination and related circuit calculation with respect to D.C supply. Charging and discharging of capacitor. Energy stored in capacitor.
4. Electromagnetics: Magnetic circuit, comparison between electrical and magnetic circuit, series-parallel magnetic circuit calculation, magnetic hysteresis, hysteresis and eddy current losses, magnetic materials, statically and dynamically induced e.m.f, co-efficient of self and mutual inductance, co-efficient of coupling, series-parallel combination of inductance, rise and decay of current in inductive circuit, force experienced by current carrying conductor placed in magnetic field.
5. A.C. Fundamentals: Generation of alternating voltage and current, their equations, various types of waveform, definition-R.M.S. average value. Vector representation of alternating quantities, addition and subtraction of vector-complex algebra
6. A.C. Circuit: Phasor relationship between voltage and current in each of resistance, inductance and capacitor. A.C. series and parallel circuit power and power factor, method of circuit solution (analytically and vectorially), resonance in series and parallel circuit.
7. Poly-phase Circuit: Generation of poly-phase voltage, 3-phase system, phase sequence, inter connection of 3-phases voltage, current and power relationship in balance 3-phase circuit, power measurement in 3-phase and 1-phase circuit.
8. Electronics: Impurities in semi-conductor, N-type and P-type semiconductors, P-Njunction and its properties, crystal diode and application in fullwave Rectifier circuit, characteristics of zener diode and tunnel diode working and application of special diode like LED, varactor diode, photo diode and photo transistors, CRO and its application for measurement of voltage, frequency and power factor, use of multiplier.

* Term Work: Term work shall be based on the above syllabus.

* Text Books:

- | | |
|---------------------------------|----------------|
| 1. Electrical Technology Vol-1 | By B.L.Theraja |
| 2. Basic Electrical Engineering | By V.N.Mittal |
| 3. Electronics made simple | By V.K.Mehta |

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106: ENGINEERING GRAPHICS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	2	4	100	-	50	150

PART - 1:

*** PLANE GEOMETRY AND MACHINE PARTS:**

Introduction to engineering graphics: Principles of projection lines and dimensioning. B.I.S. code of practice (sp 46) scale, Representative fraction(R.F.), plain scale, diagonal scale, vernier scale and scale of chords.

Engineering curves: classification of engineering curves, construction of conics, cycloid curves, involute and spiral.

Loci of points: Simple mechanism like slider crank mechanism, four bar chain mechanism etc.

Fastening and connecting methods: Screw thread, bolts, nuts, stud, locking device, simple riveted and welded joints, pipe fitting, coupling, cotter joints, pin joints. Electrical electronics, chemical and pipe drawing. Basic notation and symbol for simple flow diagram.

PART - 2:

*** SOLID GEOMETRY:**

Introduction to projection of points, line and plane: Projection of line inclined to both planes and simple cases. True length of straight line and its inclination with reference planes (traces are not included), projection of perpendicular and oblique plane.

Introduction to projection of solid, section of solid and interpretation of solid: Classification of solid, with their axis inclined to both planes. Projection of sphere, section of pyramid, cone, prism and cylinder. Method of determining of intersection and curve of intersection.

Intersection of prism-prism, cone-cylinder, cylinder-cylinder, cylinder-cone, cylinder-prism.

Development of surface: Parallel line development, Radial line development, Development of sphere by zone method and lune method.

PART - 3:

*** ORTHOGRAPHIC PROJECTION:**

Orthographic projection: conversion of pictorial of pictorial views into orthographic views, Type of sections (full, half, offset, broken, removed, revolved), section views, orthographic reading, missing views and missing line problems.

Isometric view: Conversion of orthographic views into isometric views.

Introduction to Computer Aided drafting: Advantages of CAD, Elements of CAD, Components of computer, input and output devices, types of software, Basic functions, Drafting software.

*** TERM WORK:**

Each candidate shall submit a set of following sheets, certified by principal of the college that they have been executed in a satisfactory manner in the Drawing Hall of the college.

1. One sheet of engineering curves.
2. One sheet of Loci of points.
3. One sheet of projection of points, line and plane surfaces.
4. One sheet of orthographic view with section (2 problem, one in first angle and other in third angle system of projection.)

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5. One sheet of reading of orthographic views and missing line/missing views.
6. One sheet of projection solids and section of solids.
7. One sheet on development of surfaces and interpretation of surfaces.
8. One sheet on isometric projection/view.
9. Sketch book containing sketches of machine parts, electrical, electronics, chemical and pipe drawing, lines, dimensioning, scales. Students' are given complete understanding of BIS code SP46.

* Reference Books:

1. Engineering Drawing. VOL -I &II By P.J.Shah
2. Engineering Drawing. By N.D.Bhatt
3. Machine Drawing. By N.D.Bhatt

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107: INTRODUCTORY COURSE IN COMPUTER Using C & C++

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	4	3	100	50	50	200

1. Introduction: Introduction to computer, organization of computer (block diagram), modes of operation, type of programming languages, basic structure of C program, programming style, execution of C program.
2. Constants, Variables and Data types in C: Character set, C tokens, keywords and identifiers, constants, variables, data types, declaration of variables, value assignment, symbolic constants.
3. Operator and expression: Arithmetic, relational, logical, assignment, increment, decrement, conditional, bit-wise and special operators, arithmetic expression, priority and evaluation type conversion.
4. Data Input-Output: Reading and writing a character, formatted input and output.
5. Control Statement: Branching- IF and ELSE statement, nesting, ELSE IF ladder, switch statement, operator, go to statement.
6. Looping: WHILE, DO and FOR statement and jump in loops.
7. Arrays: One dimensional, two dimensional arrays and their initialization, multidimensional array.
8. Character String: Declaring and initializing, reading and writing string, arithmetic operation, combination, comparison and handling of string.
9. Functions: C functions, necessity, categories, calling and nesting of functions, argument with and without return values, recursion, function with arrays, non-integer functions, and their handling.
10. Structure and Handling: Definition, initialization, assignment of values, comparison of structure variables, arrays, structure within structure, structure and functions, unions, size of structure, bit field.
11. Pointers: Introduction, pointer and arrays, pointers and strings, pointers and structures, pointer miscellany.
12. File Management in C: Defining, opening and closing a file, input, output and error handling, random access to file, command line argument.
13. OBJECT ORIENTED CONCEPTS :Object Oriented Development, The Object Modeling Technique, Objects And Classes, Generalization And Inheritance, Aggregation
14. OBJECT ORIENTED PROGRAMMING STYLE & LANGUAGES :Object-Oriented Style, Reusability, Extensibility, Class Definitions, Creating Objects, Calling Operations, Using Inheritance, Implementing Association, Object-Oriented Language Features.
15. OBJECT ORIENTED LANGUAGES :
 - AN EXAMPLE Basic Programming, Output Using Cout,
 - Preprocessor Directives,
 - Variables, Input and output, Manipulators, Type Conversion,
 - Operators,
 - Library Functions,
 - LOOPS & DECISIONS,
 - Structures,
 - Enumerated Data Types,
 - Simple Functions,

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- Passing Arguments,
- Overloaded Functions, Inline Functions, Default Arguments,
- A Simple Class, Objects As Physical Objects & As Data Types,
- Constructors, Objects As Physical Objects & As Data Types,
- Constructors Objects As Function Arrays Of Objects, Strings.
- Function Overloading & Operator Overloading
- Overloading Unary Operators,
- Overloading Binary Operators,
- Data Conversion,
- INNERITANCE, Class Hierarchies, Public And Private Inheritance,
- Levels of inheritance, Multiple Inheritance, Containership,
- Classes Within Classes, Pointers, Memory Management,
- New And Delete,
- Pointers To Objects, Pointers To Pointers,
- Debugging Pointers Virtual Function,
- Friend Functions, Static Functions,
- Assignment And Copy Initialization,
- The This Pointer Streams, String I/O, Character I/O, Object I/O,
- I/O With Multiple Objects,
- File Pointers,
- Disk I/O With Member Functions,
- Error Handling,
- Redirection, Command Line Arguments,
- Printer Output,
- Overloading The Extraction And Insertion Operations,
- Multi-File-Programs, Using the Project Feature.

* Books:

1. Programming in C By E.Balagurusami, TMH
2. Understanding pointer in C By Yashwant Kanetkar, BPB
3. Programming in C By Byron S. Gottfried, Schoum series, TMH
4. OBJECT ORIENTED PROGRAMMING IN TURBO C++
By ROBERT LAFORE
5. PROGRAMMING WITH C++ BY BALAGURUSAMY

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108: COMMUNICATION SKILLS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
2	-	3	100	-	-	100

1. Introduction: Importance of language and communication skills in the engineering profession.
 2. Spoken and conversational English: Main features, Agreements, Disagreements, likes, dislikes and enquiries debate and discussion.
 3. Basic sentence pattern in English: Agreements between subjects and verbs, proper use of pronouns, adjectives and adverb, proper use of phrases and clauses, some basic rule of compositions.
 4. Concept of Register: Development of vocabulary, reference skills dictionary thesaurus, indexing, contents, glossary, reading of selected texts and discussion vocabulary building tasks.
 5. Note taking note making: Linkage, development of paragraphs cohesion coherence and style.
- * Reference Book:
1. Grant Taylor, English Conversation Practice.
 2. G.H.Valliance, Good English

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B.E SEMESTER – III

IT301 MATHEMATICS - III

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	-	3	100	-	-	100

FOURIER SERIES

Periodic Functions. Dirichlets Conditions. Fourier Series, Euler's Formulae, Fourier Expansion Of Periodic Functions With Period 2π Fourier Series Of Even And Odd Functions, Fourier Series Of Periodic Functions With Arbitrary Periods, Half Range Fourier Series, Harmonic Analysis.

LAPLACE TRANSFORMS

Motivation, Definition, Linearity Property, Laplace Transforms Of Elementary Functions, Shifting Theorem Inverse Laplace Transforms, Laplace Transforms Of Derivatives And Integrals, Convolution Theorem, Application Of Laplace Transforms In Solving Ordinary Differential Equations, Laplace Transforms Of Periodic, Unit Step and Impulse Functions.

ORDINARY DIFFERENTIAL EQUATIONS

Linear Differential Equations Of Higher Order With Constant Coefficients. Method Of Variation Of Parameters, Higher Order Linear Differential Equations With Variable Coefficients (Cauchy's And Legendre Forms), Simultaneous Linear Differential Equations, Models For The Real World Problems And Their Solutions

In Particular, Modeling Of Electric Circuits, Deflection Of Beams, Free Oscillations, Resonance, Solution Of Bessel And Legendre Equations By Series Method, Definition And Properties Of Bessel's Function, Legendre's Polynomials And Properties Like Recurrence Relations, Orthogonality.

PARTIAL DIFFERENTIAL EQUATIONS

Formation Of Partial Differential Equations, Directly Integrable Equations, Models Of Engineering Problems Leading To First Order Partial Differential Equations. Lagrange's Equations. Solutions Of Special Type Of First Order Differential Equations. Homogeneous Linear Equations With Constant Coefficients, Application Of Partial Differential Equations, Boundary Value Problems And Method Of Separation Of Variables, Modeling Of Vibration Of A Stretched String - One Dimensional Wave Equations.

NUMERICAL METHODS

Motivation, Errors, Truncation Error, Rounded Error, Absolute Error, Relative Error And Percentage Error, Solution Of Algebraic And Transcendental Equations By Newton Raphson, Bisection, False Position And Iteration And Extended Iteration Methods, Convergence Of These Methods.

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN
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REFERENCE BOOKS:

- 1) Higher Engineering Mathematics, {By Dr. B.S.Grewal}
Khanna Publishers, New – Delhi
- 2) Engineering Mathematics - Vol I,II {By Prof. Wartikar & Wartikar}
Pune Vidyarthi Griha,Pune
- 3) Engineering Mathematics Vol I & II {By S.S.Sastry}
Printice Hall Of India ,New Delhi
- 4) Engineering Mathematics { By Dhavan & Shrivastav}
Danpat Rai & Sons , New Delhi
- 5) Mathematics For Engineering Students, { By P.D.S. Verma}
Kalyani Publishers,Ludhiyana & Delhi
- 6) A Text Book On Engineering Mathematics,Laxmi {By N.P.Bali}
Ashok Saxena & Iyengar Publication(P) Ltd. New-Delhi
- 7) Engineering Mathematics Vol I & II {Kandasamy, Thilagavathi & Gunavathi}
S. Chand & Co. (Pvt) Ltd, New -Delhi
- 8) (A) A First Course In Mathematics For Engineers.
(B) Mathematics For Engineers
(C) Advanced Mathematics For Engineers.Prasad Mudranalaya, Beli Avenue,
Allahabad {By ChandrikaPrasad}
- 9) Engineering Mathematics Vol I II III IV { By Kumbhojkar G.V. }
C. Jamnadas & Co. Bombay
- 10)Engineering Mathematics - Vol I { By Majmudar T. }
New Central Book Agency (P) Ltd, 8/1 Chintamani Das Lane,Calcutta.
- 11) Advanced Engineering Mathematics {By Erwin Kreyszig}
Wiley Eastern Ltd, New Delhi (Fifth Edition),

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IT302: Communication Systems – I

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

ANALOGUE MODULATION TECHNIQUES:

Principles of Analogue Modulation Techniques VIZ. AM, FM, PM, SSB, their generation principles (Block Schematic and Mathematical derivations), FDM, TDM, PAM, PWM, PFM, Sampling Theory.

DIGITAL COMMUNICATION:

PCM, DPCM, DM, ADM, T1 Carrier System, Bandwidth Requirement, Signaling Rate.

DIGITAL MODULATION TECHNIQUES:

ASK, FSK, CPFSK, PSK, BPSK, QPSK, MSK, their comparison.

ERROR CONTROL:

Error Control Coding Methods, Error Detection and Correction Methods like Parity Check, Repetition Coding, Block Code, Cyclic Code etc.

LIGHT COMMUNICATIONS:

Principles of Light Communication in Fiber, Losses in Fiber, Dispersion Losses, Light Sources and Photo Detector, Connectors and Splicers.

SATELLITE COMMUNICATION:

Definitions and Terms of Earth Orbiting Satellites, Orbiting Elements, Apogee and Perigee Heights, Geostationary Orbits, Satellite Multiple Access Methods (FDMA, TDMA, SSMA).

Satellite Services-

INSAT, INTELSAT, DBS, MSAT, VSAT, RADARSAT, INMARSAT, GPS, ORBCOMM, IRIDIUM etc.

FAX:

Fax transmission Principle, Scanning and Printing Methods, Digital Fax transmission and methods of Data Compression.

TELEVISION:

TV Transmission and Reception (Block Diagrams and Working Principles).

REFERENCE BOOKS:

ELECTRONIC COMMUNICATIONS {By RODDY AND COOLAN } PHI

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IT303: COMPUTER SYSTEM ARCHITECTURE – I

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

UNIT I

Concept of Von Newman Machine, components in a computer, functions of various of components, bus structure, arithmetic logic unit, computer arithmetic: addition/subtraction of integers, multiplication and division of integers; floating point arithmetic operations, BCD arithmetic operations.

UNIT II

Concept of instruction format and instruction set of a computer, types of operands and operations; addressing modes; processor organization, register organization and stack organization; instruction cycle; basic details of Pentium processor and power PC processor, RISC and CISC instruction set.

UNIT III

Memory devices: Semiconductor and ferrite core memory, main memory, cache memory, associative memory organization; concept of virtual memory; memory organization and mapping; partitioning, demand paging, segmentation; magnetic disk organization, introduction to magnetic tape and CDROM.

UNIT IV

IO Devices: Programmed IO, interrupt driver IO, DMA, IO modules, IO addressing; IO channel, IO Processor, Dot matrix printer, ink jet printer, laser printer.

UNIT V

Advanced concepts: Horizontal and vertical instruction format, microprogramming, microinstruction sequencing and control; instruction pipeline; parallel processing; problems in parallel processing; data hazard, control hazard.

Text Books:

1. "Computer organization and architecture", Williams Stallings, PHI of India, 1998.
2. Computer organization, Carl Hamachar, Zvonko Vranesic and Safwat Zaky, McGraw Hill International Edition.
3. Computer Architecture & Organization, John P. Hayes, TMH III Edition.

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IT304: OBJECT ORIENTED PROGRAMMING USING JAVA

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

UNIT I:

Introduction to object oriented programming concepts- java as an object oriented programming language –
introduction to java applications and applets-control structures-methods-arrays.

UNIT II:

Object based and object oriented programming-creating packages –using overloaded constructors-static
class variables-data abstraction and information hiding-relation between super class objects and subclass
objects-composition verses inheritance-polymorphism –dynamic method binding-abstract super classes and
concrete super classes-inheriting interface- use of inner classes and wrapper classes-StringTokenizer and
StringBuffer classes.

UNIT III:

Role of object oriented programming in designing GUI- Graphics and Java2D- overview of swing-event
handling, adapter classes and layout managers. Advance GUI components-JPopupMenu-
JDesktopPaneadvance
layout managers.

UNIT IV:

Exception handling and multithreading in object oriented programming- When exception handling should
be used-java exception handling-exceptions and inheritance- multithreading in java –thread
synchronization-daemon threads- Runnable interface- Files and Streams in java.

UNIT V:

Network and Database handling through object oriented programming- using JDBC – processing
queriesoverview
of servlets- multitier applications using JDBC from a Servlet- introduction to networkingestablishing
a simple server and a client- introduction to RMI - implementing the remote interface.

Reference Books:

1. Java How To Program, H. M. Deitel and P. J. Deitel, Prentice Hall 3rd edition.
2. "An Introduction to Programming and object oriented Design using Java" by Jaime Nino and Fedric A.Hosch, John Wiley.
3. An introduction to Object Oriented Programming with Java II Edition, C. Thomas Wu, TMH.
4. The complete reference JAVA 2 IV Edition, Herbert Schildt, TMH.
5. Introduction to Java Programming, Daneal/Yong, PHI.
6. Beginning Java 2 , Ivon Horton ,Wrox Publishers .
7. Internet and Java Programming, R.Krishnamoorthy nsd S.Prabhu, New Age International.

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IT305: DIGITAL ELECTRONICS & MICROPROCESSORS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

Data And Number Representation - Binary - Complement Representation BCD - ASCII, ASCII Boolean Algebra, Logic Gates, Minimization, Use Of Programs Such As Espresso In Minimization Digital Circuit Technologies, RTL/DTL/DCTL/TTL/MOS/CMOS/ECL, Analysis Of Basic Circuits In These Families, Internal Architecture Of Programmable Logic Devices
 Combinational Design, Design With MUXES
 Sequential Circuits, Flip-Flops, Counters, Shift Registers, Multi-Vibrators, State Diagrams - Sequential
 Circuit Design From State Diagrams - Computer Aids In Synthesis
 Memory System - RAM, ROM, EPROM, PAL, PLDS, PGAS
 Bus Structures, Transmission Line Effects, Line Termination.
 Ad And Da Conversion Techniques And Selected Case Studies.
 Cad Tools, FPGA Based Design Exercises
 Introduction To VLSI Design, Custom And Semi-Custom Design
 8085 Microprocessor Architecture And Memory Interfacing.
 - Microprocessor Architecture and its Operations.
 - Memory and I/O Devices.
 Interfacing I/O Devices :
 - Basic Interfacing Concepts.
 - Interfacing Output Devices.
 - Interfacing Input devices.
 - Memory-Mapped I/O.
 Fundamental of Microprocessor Programming
 Interfacing Peripherals :
 o Interrupts.
 o General Purpose Programmable Peripheral Devices.

Test/Reference Book(S) :

- | | |
|--|--|
| 1) Digital Design | {By Morris Mano} |
| 2) Designing With Fpgas And Cplds | {By Jesse li Jenkins} |
| 3) Digital Integrated Electronics | {By H Taub & D Schilling} |
| 4) VHDL | {By Douglas L Perry} |
| 5) Introduction To VLSI Systems | {By C Mead And I Conway} |
| 6) Electronics For Scientists And Engineers | {By T.R.Viswanathan , G.K.Mehta And Rajaraman} |
| 7) Integrated Electronics, Analog And Digital Circuits And Systems | {By J . Millman And Halkias} |

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IT306: COMPUTER ORIENTED NUMERICAL METHODS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

- Methods For Solution Of Equation
- Errors (And Numerical And Instabilities) In Numerical Methods.
- Solution Of Simultaneous Linear Algebraic Equation.
- Interpolation
- Least Squares Approximations.
- Numerical Differentiation And Integration
- Ordinary Differential Equations.

Texts/ References:

1. Numerical Methods With Fortran Iv Case Studies {By William S. Doon. & Daniel D. Mccracken. }
2. Computer Oriented Numerical Methods {By Rajaraman.}

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B.E SEMESTER – IV

IT401: DISCRETE MATHEMATICS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	-	3	100	-	-	100

PREDICATE CALCULUS :(10%)

Introduction, Objectives, Predicates, Statement Functions, Variable And Quantifiers, Free And Bound Variables, Special Valid Formulas Involving Quantifiers - Theory Of Inference For The Predicate Calculus.

FUZZY SETS:(20%)

Some Useful Definitions, Basic Operations On Fuzzy Sets Image And Inverse Images,I-V Fuzzy Sets,Fuzzy Relations.

GROUP THEORY :(20%)

Definition And Examples Of Semigroups, Monoids And Groups. Abelian Group, Cyclic Group; Subgroup, Permutation Groups, Coset Decomposition Of Groups, Normal Subgroups, Lagranges Theorem.

LATTICES :(20%)

Poset, Lattice As A Poset, Properties Of Lattices, Lattices As Algebraic Systems, Sublattices, Direct Product And Homomorphism, Complete Lattices, Bounds Of Lattices, Distributive Lattices, Complemented Lattice

BOOLEAN ALGEBRA :(20%)

Introduction, Definition And Properties, Sub-Boolean Algebra Direct Product And Homomorphism, Atoms, Stone's Representation Theorem. Boolean Expressions And Their Equivalences. Minterm And Max Terms. Boolean Algebra, Values Of Boolean Expressions, Canonical Forms, Boolean Functions, Symmetric Boolean Functions.

GRAPH THEORY :(20%)

Basic Concept Of Graph Theory; Basic Definitions. Path, Reachability And Connectedness ,Matrix Representation Of Graphs; Trees

REFERENCE BOOKS :

- 1) DISCRETE MATHEMATICAL STRUCTURES WITH APPLICATION TO COMPUTER SCIENCE; {BY TREMBLAY, J.P. & MANOHAR }
MCGRAW HILL - NEW DELHI
- 2) DISCRETE MATHEMATICS AND ITS APPLICATIONS {BY ROSEN,KENNETH L.}
MCGRAW HILL - NEW DELHI
- 3) APPLIED DISCRETE STRUCTURES FOR COMPUTER SCIENCE {BY ALAN DOERR & KENNETH L.}
GULGOTIA PUBLICATIONS PVT.LTD. NEW DELHI
- 4) DISCRETE MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE { BY KOLMAN, B& BUSBY R.C.}
PRASNTICE HALL OF INDIA PVT LTD.,NEW DELHI
- 5) FUZZY SETS AND FUZZY LOGIC. THEORY AND APPLICATIONS {BY GEORGR J. KLIR/BO YUAN}

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IT402: MANAGEMENT INFORMATION SYSTEM

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

INTRODUCTION TO BUSINESS SYSTEM:

Data Capture, Processing, Dissemination, Storage/ Retrieval, I/O and Storage Devices, Terminals Printers and Disks.

PRINCIPAL OF DATA PROCESSING:

Data Representation and File Management in Cobol: Sequential ,Indexed And Relative Files User Interfaces, Report Writer, Screen Management

DATA MANAGEMENT SOFTWARE:

Packaged Software: Word Processors, Spread Sheets, Data Management Packages Such as Dbase and Foxpro

PRINCIPLES OF SOFTWARE ENGINEERING :

Software Development Methodology, System Analysis, DFD. ER Model. Design Concepts. Software Architecture. File (Table) and Process Design. Issue In System Implementation. Enterprise Resource Planning (EPR), Management Resource Planning (MRP-2) Software Like SAP, Marcan

SPECIAL TOPICS:

Introduction To Management Information System And Decision Support Systems

TEXT/REFERENCE BOOK(S):

- 1) Structured Cobol Programming With Application
{By N.I.Sarda }
- 2) Cobol Programming
{By Roy And D. Ghosh Dastidar }
- 3) Software Engineering
{By R.S. Pressman }

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IT403: DATA STRUCTURES AND ALGORITHMS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

INTRODUCTION

- Linear Data Structures I: Arrays & Records
- Linear Data Structures II: Stack and Queues
- Linear Data Structures III: Strings, Recursion
- Linear Data Structures IV: Linked List,
- Non Linear Data Structures I: Trees
- Non Linear Data Structures II: Hashing, Sets, Graphs, Files
- Various Searching and Sorting Techniques

TEXTS/REFERENCES:

1. Data Structures And Algorithms,
 {By Aho.A.V.,J.E.Hopcroft,J.D. Ullman} Addison-Wesely, 1983.
2. Computer Algorithms: Introduction To Design And Analysis
 {By Baase, S.} Addison-Wesely,1978.
3. Data Structures, Theory And Practice
 {By Berztiss, A.T.} 2nd Ed. Academic Press, 1977.
4. Data Structures, An Object-Oriented Approach,
 {By Collins, W.J.} Addition-Wesely, 1992.
5. Introduction To The Design And Analysis Of Algorithms
 Mcgraw-Hill,1977 {By Goodman. S.E. S.T. Hedetniemi}
6. Algorithms : Design And Analysis,Computer
 {By Horowitz,E.S.Sahni} Science Press, 1977.
7. Fundamentals Of Data Structures In Pascal
 {By Horowitz,E.S.Sahni} Computer Sciences Press,1984.
8. The Art Of Computer Programming, Vols 1-3,
 {By Knuth, D.E.} Addison-Wesely, 1973.
9. Data Structures And Program Design
 {By Kruse, R.L.} 2nd - Ed, Prentice Hall, 1987.
10. Sorting And Sort Systems,
 {By Lorin, H.} Addison-Wesley, 1975.
11. Data Structure Techniques,
 {By Standish, T.A.} Addison-Wesley, 1973.
12. An Introduction To Data Structures With Application
 Mcgraw Hill, 1976. {By Tremblay, J.P., P.G. Sorenson}
13. Algorithms Data Structures Programs
 {By Wirth, N.} Prentice-Hall, 1976.

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IT404: COMMUNICATION SYSTEMS – II

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

UNIT – I :

Introduction to Cellular Mobile Systems:

A basic cellular system, performance criteria, Uniqueness of Mobile Radio Environment, Operation of cellular systems, planning and cellular systems, analog & cellular systems.

Elements of Cellular Radio Systems Design:

General description of the problem, concept of Frequency channels, co-channel Interference Reduction Factor, desired C/I from a normal case in an Omni directional antenna System, cell Splitting, consideration of the components of cellular systems.

UNIT – II :

Interference:

Introduction to co-channel interference, real time co-channel interference measurement, design of antenna system, antenna parameters and their effects, diversity receiver non co-channel interference- different types.

UNIT – III :

Cell Coverage for Signal and Traffic:

General Introduction, obtaining the Mobile point-to-point mode propagation over water or flat open area, foliage loss, propagation near in distance, long distance propagation, point-to-point predication model – characteristics, cell site, antenna heights and signal coverage cells, mobile – to mobile propagation.

UNIT – IV :

Cell Site Antennas and Mobile Antennas:

Characteristics, Antennas at Cell site, Mobile Antennas.

Frequency Measurement and Channel Assignment:

Frequency Management, Fixed channels assignment, Non-fixed channel assignment, traffic and channel assignment.

UNIT – V :

Hand-Off, Dropped Calls:

Why hand-off, types of hand off and their characteristics, dropped call rates and their evaluation.

Operational Techniques:

Parameters, Coverage hole filler, leaky feeders, cell splitting and small cells, narrow beam concept.

References:

1. Cellular and Mobile Communications by Lee, Mc Graw Hill.
2. Wireless Digital Communication by Dr. Kamilo Faher (PHI).

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IT405: COMPUTER SYSTEM ARCHITECTURE – II

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

UNIT – I

Trends towards parallel processing, parallelism in uniprocessor systems, parallel computer structures, architectural classification schemes, parallel processing applications, memory hierarchy in parallel processing systems, addressing schemes. Pipeline concept, linear pipelining and space time diagram, classification of pipeline processors, nonlinear pipeline and reservation table, interleaved memory organization, arithmetic pipelines, principles of designing pipeline processors, vector processing.

UNIT – II

SIMD array processors, organization, masking and routing mechanisms, inter PE communications, SIMD inter connection networks, single stage and multi stage networks, mesh connected Illiac networks, parallel shifter, shuffle exchange and omega networks, parallel algorithms for array processors, matrix multiplication, polynomial evaluation, parallel sortings, fast fourier transform computation, associative array processor.

UNIT – III

Multiprocessor architecture, loosely coupled and tightly coupled multiprocessor systems, processor characteristics, inter connection networks crossbar switch and multi port memories, multi stage networks, banyan and delta networks parallel memory organization, multiprocessing operating systems, classification and requirements, software requirements for MPS, language features to exploit parallelism, multi processor scheduling strategies, parallel algorithms.

UNIT – IV

Data flow computers, control flow versus data flow, data flow computer architectures, data flow graphs, data flow languages, Dennis and Irvine machines, dataflow design alternatives, dependence driven and multi level event driven approaches, VLSI computing structures, systolic array architecture, VLSI matrix arithmetic processor.

UNIT – V

Performance evaluation of computers, measurements and parameters, stochastic model simulation model, study of architecture of Cray and Cyber super computers, massively parallel processor systems, image processing on MPP, C.mmp multiprocessor system, crazy X MP super computer.

TEXT BOOKS:

1. "Computer Architecture and parallel processing", Hwang K, Briggs F.A McGraw Hill.
2. Scalable Parallel Computing , K. Hwang, Z. Xu, Mc Graw Hill.

Reference:

1. Advanced Computing Architectures, Dezso Sima, Terence Fountain, Peter Kacsuk, Person education.

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IT406: OPERATION RESEARCH

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

INTRODUCTION TO OR MODELING APPROACH AND VARIOUS REAL LIFE SITUATIONS.

Linear Programming Problems & Applications, Various Components Of Lp Problem Formulation, Solving Linear Programming Problem Using Simultaneous Equations And Graphics Method Simplex Method & Extensions.

Sensitivity Analysis
 Duality Theory
 Revised Simplex
 Dual Simplex
 Transportation And Assignment Problems
 Network Analysis Including Pert-Cpm

Concepts Of Network
 The Shorted Path
 Minimum Spanning Tree Problem
 Maximum Flow Problem
 Minimum Cost Flow Problems
 The Network Simplex Method
 Project Planning & Control With Pert & Cpm

Integer Programming Concepts, Formulation, Solution And Applications.

Dynamic Programming Concepts, Formulation, Solution And Applications.

Game Theory.

Queuing Theory & Applications.

Linear Goal Programming Methods And Applications.

Simulation.

TEXTS/REFERENCES :

1. Problems In Operation Research {By P.K.Gupta And Manmohandas}
2. Introduction To Or {By F.S.Hillier & G.J.Liberman}
 Mcgraw Hill Int. Series 1995.
3. Introduction To Or {By A.Ravindran}
 John Wiley & Sons, 1993.
4. R. Kapoor Computer Assisted Decision Models, Tat Mcgraw Hill 1991.

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B.E SEMESTER – V

IT501: DATABASE MANAGEMENT SYSTEMS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

INTRODUCTORY CONCEPTS

Three Scheme Architecture of DBMS, Brief History of DBMS Development Introduction To ER Model, Relational Data Model, Relational Algebra and SQL, Database Design and Conceptual Database Design. Theory of Normalization

RELATIONAL THEORY AND SQL RELATIONAL CONCEPTS:

Relational Algebra, Relational Calculus. ANSI-SQL-2: DDL, DML, Constraints and Assertions, Views, Database Security.

APPLICATION DEVELOPMENT USING SQL:

Host language interface and embedded SQL programming 4 GL's, Forms management and report, Writes stored procedures and triggers. Internals of RDBMS physical data structures, Data systems architecture,

QUERY OPTIMIZATION:

Join algorithm, statistics and cost base optimization transaction processing, concurrency control and recovery management transaction model properties and state serializability, lock base protocols, Two phase locking.

SPECIAL TOPICS

Brief introduction to distributed database systems, Temporal databases and object oriented database.

TEXTS/REFERENCES :

1. Database Systems Concepts

{By H.F.Korth And Silberschatz Abraham}
McGraw Hall,1991.

2. Fundamental of database systems

{By Ramez Elmasri And Shamkant B Navatha}
The Benjamin/Cummings Publishing Co.,
Second Edition, 1994.

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IT502: COMPUTER NETWORKS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

1. Introduction:

Network Applications. Network Hardware. Network Software. Reference Models.

2. The Physical Layer

Guided Transmission Media. Wireless Transmission. Communication Satellites. The Public Switched Telephone Network. The Mobile Telephone System. Cable Television.

3. The Data Link Layer:

Data Link Layer Design Issues. Elementary Data Link Protocols. Sliding Window Protocols.

Example of Data Link Protocols: HDLC: High-Level Data Link Control, The Data Link Layer In The Internet.

4. The Medium Access Sub-layer:

The Channel Allocation Problem. Multiple Access Protocols. Ethernet. Wireless LANS. Broadband Wireless. Blue Tooth. Data Link Layer Switching.

5. The Network Layer:

Network Layer Design Issues. Routing Algorithms. Congestion Control Algorithms. Quality Of Service. Internetworking. The Network Layer In The internet: The IP Protocol, IP Addresses, Internet Control Protocols, The Interior Gateway Routing Protocol: OSPF. The Exterior Gateway Routing Protocol: BGP, Internet Multicasting, Mobile IP, Ipv6.

6. The Transport Layer:

The Transport Service. Elements Of Transport Protocols. A Simple Transport Protocol

Internet Transport Protocols: UDP;

TCP: Introduction To TCP, The TCP Service Model, The TCP Protocol The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, Modeling TCP Connection Management, TCP Transmission Policy, TCP Congestion Control. TCP Timer Management, Wireless TCP And UDP, Transactional TCP.

Performance Issues: Measuring Network Performance, System Design For Better PERFORMANCE, FAST TPDU Processing, Protocols For Gigabit Networks.

7. The Application layer:

DNS: The Domain name system; Electronic Mail; SNMP

8. ATM Network:

ATM Layer. ATM Application Layer. ATM Signaling. PNNI Routing.

9. Case study with Window 2000/Linux

TOPICS FOR EXPERIMENTS

1. PC-to-PC file transfer using serial ports.

2. Network OS installation and configuration.

3. Networking Hardware and software components.

4. Network Routing.

5. Network Socket programming.

6. Shortest path routing.

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7. Modem commands study.
8. Use network simulators like NS2, DLL simulators.
9. Implement multithreaded client – server application.
10. Assignment: prepare short note on any one advanced topic(not from above syllabus)

BOOKS

Text Books:

1. A.S. Tanenbaum, “Computer Networks”, 4th edition, Prentice Hall
2. B.F. Ferouzan, “Data and Computer Communication”, Tata McGraw Hill

Reference:

1. Peterson & Davie, “ Computer Networks”, 2nd Edition, Morgan Kaufmann.
2. Kurose, Ross, “Computer Networking”, Addison Wesley
3. Leon-Gracia And Widjaja, “Communication Networks”, Tata Mcgraw Hill
4. S.Keshay, “An Engg. Approach To Computer Networking”, Addison Wesley.
5. W. Richard Stevens, “TCP/IP Volume 1,2,3 “, Addison Wesley.

TERM WORK:

1. Term work should be based on above listed practical.
2. A term work test must be conducted with a weightage of 10 marks

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IT503: COMPUTER GRAPHICS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

INTRODUCTION :

What is computer graphics? Elements of a graphics, Workstation.device independence fundamental problems in geometry.

BASIC RASTER GRAPHICS :

Scan Conversion, Filling And Clipping

GEOMETRIC MAINIPULATION :

Transformation , Matrices ,Homogeneous Coordinates.

ELEMENTARY 3D GRAPHICS :

Plane Projections, Vanishing Points Specification of A 3D View

VISIBILITY :

Image And Object Precision , Z-Buffer Algorithms Area Based Algorithms,Floating Horizon.

ADVANCED ISSUES :

Any One Of The Following Topics:

- A) Curves And Surfaces: Parametric Representation. Benzier And B-Spline Curves
- B) Rendering : Raytracing, Antialiasing,Fractals,Gourard And Phong Shading.
- C) User Interface : Issues In User Interface, Elements Of Window Systems (X,Mac-Os,Mswindows) ,
Elements Of Toolkit Programming.

TEXT/REFERENCE BOOK(S) :-

- 1)An Introduction To Splines For Use In Computer Graphics And Geometric Modelling.
{By R.H. Bartels,J.C.Beatty And B.A.Barsky}
- 2)Graphics:Principles And Practice.
{By J.Foley,A.Van Dam, S. Feiner, And J. Hughes, Computer}
- 3)Computer Graphic {By D.Hearn And P.Baker }
- 4)Introduction To Algorithms {By C.E.Leiserson , T.H. Cormen And R.L.Rivest}
- 5)Lecture Notes In Computer Graphics. {By David Mount }
- 6)Principles Of Interactive Computer Graphics.{By W. Newman And R. Sproull}
- 7)Theory And Problems Of Computer Graphics {By R.Pladdock And G.Kalley }
- 8)Computational Geometric:An Introduction. {By F.P.Preparatana And M.I.Shamos}
- 9)Mathematical Elements For Computer Graphics. {By D.Rogers And J. Adams }
- 10)Procedural Elements For Computer Graphics. {By David F. Rogers }
- 11)Advanced Animation And Rendering Techniques. {By Alan Watt And Mark Watt }
- 12)X Window System Programming . Osf/Motif Edition{By D. Young }

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IT504: SYSTEMS ANALYSIS AND DESIGN

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	-	3	100	-	-	100

1. APPLICATION DEVELOPMENT STRATEGIES

Selection from Alternative Strategies for Application Development Using, For Example Contingency Theory. Development Alternatives: Adoption Of Packages For New Development (Outside Developer Or In-House Development). Development Methodologies : Life Cycle, Proto-Typing Etc. Influences On Development Strategy: Master Plan, Organizational Environment, Development Organization And Resources And Information System Structure And Resources.

2. APPLICATION SYSTEM DEVELOPMENT LIFE CYCLE

Overview of the Phases of Application System Development Life Cycle and Their Interrelationship, Problem Identification and Feasibility Assessment, Requirements Determination, Logical and Physical Design, Planning to Accommodate Change, Program Development, Implementation, and Post Implementation Evaluation. Emphasis on Phased Development Approach In Planning and Completing the Study Project. Requirements for Documenting and Auditability

3. APPLICATION SYSTEM DEVELOPMENT MANAGEMENT

Project Management Concepts, Project Control for Application System Development, Responsibilities of Project Manager, Project Team Members, Users, Etc. Service Level Agreements Covering Management Disciplines, Management Of Change, Problem Resolution, Processing And Networking. Performance Management, Management Reporting. Impact of Project Management on Organizational Planning Cycles

5. PROBLEM NEED IDENTIFICATION AND FEASIBILITY ASSESSMENT

Sources of Problems and Needs, Defining the "Real" Need/Problem, Problem Analysis: Degree of Uncertainty, Usefulness of Information System Application, Programmability Volatility. Preliminary Application Requirements Determination : Variable Versus Standardized Outputs, Reporting, Data Acquisition Techniques, Application Life Expectancy, Ownership/Maintenance Responsibility. Preliminary Specification : User-System Interfaces, Mode Of Operation, Input. Output, Software, Hardware. Feasibility Assessment: Economic, Technical Operational And Schedule Feasibility, And Performance To Information System Master Plan. Just Inflection/Approval By Allocation Mechanism: Steering Committee, Pricing Of Information Services, Payback, Cost/Benefit Analysis. Suggested Deliverables By Students: Feasibility Analysis Report And Oral Presentation Plus General Application Objectives Report

6. INFORMATION REQUIREMENTS DETERMINATION

Strategies For Obtaining Information Requirements For An Application: Eliciting User Definition Of Requirements, Studying And Modifying Information Delivered By An Existing System, Deriving Requirements Through Study Of Utilizing System, Interactive Discovery Of Requirements Through Use Of A Prototype System.

Techniques for Information Requirements Determination: Document Study, System Study, Observation, Interviewing. Communication Skills, Listening, Writing, Presenting, Management/Inter-Personal Skills : Conflict Resolution, Negotiation. Requirements Documentation Methods, Narrative, Graphics Layouts, Requirements Language. Methods For Providing Assurance That Requirements Are Correct And Complete. Selecting Strategies And Techniques. Planning The Process.Suggested Deliverables By Students : (1) Live Interview With Video Tape Critique, And (2) Detailed Requirements Specifications Report Plus Oral Presentation.

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7. REQUIREMENT ANALYSIS AND LOGICAL SPECIFICATION

Description Of System Logical Data Flows, Files And Processes By Graphical And Automated Design Techniques : Top-Down Design And Hierarchical Decomposition, Tests For Logical Completeness And Consistency. Data Dictionaries, Content, Format And Organization, Automated Versus Manual Implementations. Process Description Methods Such As Structured English And Decision Tables, Documenting An Existing System. Logical Design For Target System : Data Flows, Files, And Processes, Selection Of Interfaces (Automated Versus Manual), The User Interface. User Views Of Data For Data Base Design. File Requirements : Transport Volume, Response Times, Integrity, Security, Etc. Suggested Deliverables By Students : General Logical Design Report, Documentation Plan, Walkthrough Performance.

8. QUALITY ASSURANCE REVIEW OF LOGICAL DESIGN

Dimensions For Review : Satisfaction Of User Objectives, Costs And Benefits, Logical Completeness And Consistency Tests, Quality Of User Interface, Participants And Organization For Review Progress. Walkthrough. Certification Documents. User Sign-Off. Suggested Deliverables By Students: Design Walkthrough Plan, Walkthrough Performance And Report.

9. APPLICATION SOFTWARE MAKE OR BUY DECISION

Criteria For Software Selection. Evaluation Process.

10. PLAINING TO ACCOMMODATA CHANGE

organizational and individual need for system stability, need for system changes. system design to accommodate change. monitoring for change, change management, request and approval, assessing impact, determining effect on existing systems, grouping and scheduling changes, making changes: testing, acceptance, updating procedures and documentation. suggested deliverable by student : a system change procedure.

11. DETALIED LOGICALOL DESIGN

Logical Software Design. Modularization Control and Data Flows, Process Interaction, Process Organization, Module Determination, Module Specifications. Logical File Design, Data Sharing File Structure And Logical Access Methods, Data Representation. Logical Database Design : Alternative Models Such As The Entity Relationship Database Design : Alternative Models Such As The Entity Relationship Model Scheme Levels (Conceptual, External, Internal). Representation Of User Views, View Integration : Logical Access Paths. Improvement Of Logical View : Normalization, Aggregation, Abstraction, Etc.

12.PHYSICAL DESIGN

File Design Structure, Access, Data Base Interface : Alternatives, Logical Scheme Design. System Integrity : Security, Privacy Auditability, Error Recovery, System Backup. Preliminary Procedures Design. Design Of Controls. Software Test Design : Control, Extreme Values Etc. Development Of Implementation Plan : Strategies, Coordination. Suggested Deliverables By Students : Physical System Design Report And Implementation Plan (Programme Structure : Test Plan, Conversion Plan, Training Plan, Operations Procedures Chart).

13.HARDWARE AND SYSTEM SOFTWARE SELECTION

Hardware Configuration: Mainframe And Memory, Front-End Processors Peripherals, Etc. Benchmarks, Kernels, Simulation, Vender Selection Scoring Techniques, Ref: Systems Software Selection (Operation System, Languages Processors, Editors, Cases, Methods, Communication Monitor, Etc.) Network Architectures Performance And Acceptance Criteria. Suggested Deliverable By Students, Scoring Sheet With Definition Of Each Type.

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14. PROGRAM DEVELOPMENT AND TESTING

Language Selection, Functional Decomposition, Structured Programming, Organization of The Programming Task. Software Objectives And Performance Criteria. Determination Of Acceptance Criteria. Software Test Design Strategies : Top-Down, Bottom-Up And Variants. Unit and Integration Testing. Development of A Testing Plan. Design of Test Cases and Schedulers. Test Libraries. Suggested Student Deliverables : Coding Organization Plan, Design of Test Cases For Modules And System Integration, Test Schedule.

Text Books:

1. System Analysis & Design - By James Senn (2nd Edition)

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IT505: OPERATING SYSTEMS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

Introduction to Os, Os Services and Kernel, Multiprogramming and Time Sharing, Processor Scheduling.

Memory Management, Paging and Segmentation, Virtual Memories, I/O and Device Management, Disk and File Management, Deadlocks, Concurrent Processes.

Protection and Security, Introduction to Multiprocessor and Distributed Operating Systems

TEXTS/REFERENCES:

1. Operating System Concepts {By A Silberschatz And Peter B Galvin}
Addison-Wesley
2. Systems Programming & Operating Systems {By D.M.Dhandhere }
TMH (2nd Edition)

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IT506: TECHNICAL SEMINAR & REPORT

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
-	2	-	-	25	25	50

Student has to give seminar on recent IT related topic and prepare a report of the same.

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B.E SEMESTER – VI

IT 601: ECONOMICS & MANAGEMENT

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	-	3	100	-	-	100

National income
Economic planning and public finance.

Organization
Concept , Principles
line & staff functions
organization structure and its importance
system concept of organization

Management Concept and Functions
Concepts function (planning)
Organizing, directing
Coordinating, Controlling motivating Principles of management
Traditional v/s modern management approaches
Decision making, Delegation

Productivity & its Techniques

Concepts, Gain of productivity
Productivity of economic development
Role of management in promotion of productivity
Selected productivity techniques
Work, study (time study & work management)
Quality control, Waste reduction, Job evaluation
Incentives, Inventory control
CPM & PERT

Personal Management
Personal functions, man power assessment,
recruitment, training & development
wage, salary administration
participative management, performance appraisal & counseling discipline improvement
grievance handling union management relation
(industrial relation) trade unionism in India.

Human Side of Management
Understanding of human behavior
group dynamics
interpersonal behavior, motivation
communication, leadership

Financial Management
Financial management & quantitative techniques

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management accounting
break even analysis
preparation & analysis of balance sheets
capital budgeting
cost accounting, cost & budgetary control

Marketing Management

Introduction

marketing management

concepts and approach

product development & diversification

industrial marketing.

Reference Books:

Management Analysis, Concepts & Cases by Haynes & Massie(PHI)

Personal Management by R.S. Davar (Vikas Publishing House Ltd., Delhi

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IT 603: ADVANCE DBMS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

- The Extended Entity Relationship Model and Object Model:** The ER model revisited, Motivation for complex data types, User defined abstract data types and structured types, Subclasses, Super classes, Inheritance, Specialization and Generalization, Constraints and characteristics of specialization and Generalization, Relationship types of degree higher than two.
- Object-Oriented Databases:** Overview of Object-Oriented concepts, Object identity, Object structure, and type constructors, Encapsulation of operations, Methods, and Persistence, Type hierarchies and Inheritance, Type extents and queries, Complex objects; Database schema design for OODBMS; OQL, Persistent programming languages; OODBMS architecture and storage issues; Transactions and Concurrency control, Example of ODBMS
- Object Relational and Extended Relational Databases:** Database design for an ORDBMS - Nested relations and collections; Storage and access methods, Query processing and Optimization; An overview of SQL3, Implementation issues for extended type; Systems comparison of RDBMS, OODBMS, ORDBMS
- Parallel and Distributed Databases and Client-Server Architecture:** Architectures for parallel databases, Parallel query evaluation; Parallelizing individual operations, Sorting, Joins; Distributed database concepts, Data fragmentation, Replication, and allocation techniques for distributed database design; Query processing in distributed databases; Concurrency control and Recovery in distributed databases. An overview of Client-Server architecture
- Databases on the Web and Semi Structured Data:** Web interfaces to the Web, Overview of XML; Structure of XML data, Document schema, Querying XML data; Storage of XML data, XML applications; The semi structured data model, Implementation issues, Indexes for text data
- Enhanced Data Models for Advanced Applications:** Active database concepts. Temporal database concepts.; Spatial databases, Concepts and architecture; Deductive databases and Query processing; Mobile databases, Geographic information systems

BOOKS

Text Books:

- Elmasri and Navathe, "*Fundamentals of Database Systems*", Pearson Education
- Raghu Ramakrishnan, Johannes Gehrke, "*Database Management Systems*", McGraw-Hill

References:

- Korth, Silberchatz, Sudarshan , "*Database System Concepts*", McGraw-Hill.
- Peter Rob and Coronel, "*Database Systems, Design, Implementation and Management*", Thomson Learning.
- C.J.Date, Longman, "*Introduction To Database Systems*", Pearson Education

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IT 604: GUI Design and Programming

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

UNIT I WINDOWS PROGRAMMING

Windows environment – a simple windows program – windows and messages – creating the window – displaying the window – message loop – the window procedure – message processing – text output – painting and repainting – introduction to GDI – device context – basic drawing – child window controls

UNIT II VISUAL C++ PROGRAMMING – INTRODUCTION

Application Framework – MFC library – Visual C++ Components – Event Handling – Mapping modes – colors – fonts – modal and modeless dialog – windows common controls – bitmaps

UNIT III THE DOCUMENT AND VIEW ARCHITECTURE

Menus – Keyboard accelerators – rich edit control – toolbars – status bars – reusable frame window base class – separating document from its view – reading and writing SDI and MDI documents – splitter window and multiple views – creating DLLs – dialog based applications

UNIT IV ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE)

ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX controls – Calendar Control – ActiveX control container programming – create ActiveX control at runtime – Component Object Model (COM) – containment and aggregation Vs. inheritance – OLE drag and drop – OLE embedded component and containers – sample applications

UNIT-V ADVANCED CONCEPTS

Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC classes – sample database applications – filter and sort strings – DAO concepts – displaying database records in scrolling view – Threading – VC++ Networking issues – Winsock – WinInet – building a web client – Internet Information Server – ISAPI server extension – chat application – playing and multimedia (sound and video) files

TEXT BOOKS

1. Charles Petzold, "Windows Programming", Microsoft press, 1996 (Unit I – Chapter 1-9)
2. David J.Kruglinski, George Shepherd and Scot Wingo, "Programming Visual C++", Microsoft press, 1999 (Unit II – V)

REFERENCES

1. Steve Holtzner, "Visual C++ 6 Programming", Wiley Dreamtech India Pvt. Ltd., 2003.

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IT 605: OBJECT ORIENTED ANALYSIS & DESIGN

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

1. Introduction:

Overview Of OOL; Object Classes; Meta Types. Object Oriented Methodologies; The Unihol Approach Modeling; Why Modeling? Static And Dynamic Models; Functional Models

2. Object Modeling:

Object. Links. Association. Inheritance. Grouping Constructs; Problems On Object Modiluiig. Advantages Of Object Modeling.

3. Analysis:

Problem Analysis. Problem Domain Classes. Identify Classes And Objects Of Real Worki Problems. Using Use Case Analysis; Recording Analysis.

4. Basic Object Modeling:

Multiplicity. Constraints. Aggregation. Component.

5. Sequence Diagram:

Modeling Scenarios. Mapping Events To Object, Interfaces. Discovering Attributes. Modeling Simple Collaboration Modeling. Logical Database Schema, Activity Diagram Modeling Workf low

6. Class Diagram:

Test Scenarios. Interfaces. Classes. Methods. Stress Tesng. System Tesbng. Scalability Testing. Regression Testing. Behavioral Modeling. State Chart Diagram.

7. Design:

Architectural Design. Refining The Model. Refactoring. Coupling And Cohesion Who Should Own The Attribute? Who Should Own The Operations? Process And Threads

8. Design Classes:

Classes Visibility; User Interface. Subsystem Interface.

9. Deponent Diagram:

Modeling Source Codes. Physical Databases.

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10. Deployment Diagram:

Modeling In A C/S System. Distributed System And gmDeddid **Systems**.

TOPICS FOR EXPERIMENT

Use any UML/OOAD tool and do the following:

- 1, Use case diagram.
2. Sequence diagram.
3. Collaboration diagram.
4. Activity diagram.
- S. Use case realization.
6. Class diagram.
7. Testing, Debugging. Porting.
8. Component diagram.
9. Change management using MAKE/SCCS utility.

BOOKS

Text Books:

1. Ali Bahrami, "Object Oriented System Development", McGraw Hill.
2. Graypoch. J. Rambaugh, var Jacobson, "The UML Users guide", Pearson Education
3. J. Rambaugh, etal, "Object Oriented Modelling and Design".
4. Andrew Haigh, "Object Oriented Analysis and Design ", Tata McGrawHill

Reference:

1. Simon Benett, Steve McRobb, Ray Famer, "Object Oriented System Analysis and Design Using UML", McGrawHill.
2. Timothy C. Lethbridge, Robert Laganriere, "Object Oriented Software Enginnering", McGrawHill.
3. Stephen R. Schach, "Object Oriented and Classical Software Enginnering".

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IT 602: ELECTIVE – I: REALTIME OPERATING SYSTEM

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

- * Introduction to Real time Systems
 - Digital Control
 - High Level Control
 - Signal Processing
 - Other Real time Applications

- * Types Of Real Time Systems
 - Hard Versus Soft Real Time Systems
 - Jobs and Processors
 - Release times, Deadlines, and timing constraints
 - Hard and Soft Timing Constraints
 - Hard real time systems
 - Soft real time systems

- * A reference model of real time systems
 - Processors and Resources
 - Temporal parameters of Real time Workload
 - Periodic Task Model
 - Precedence Constraints and Data Dependency

- * Commonly used approaches to real time Scheduling
 - Clock Driven Approach
 - Weighted Round robin Approach
 - Priority Driven Approach
 - Dynamic Versus Static Systems
 - Effective Release times and deadlines
 - Optimality of the EDF and LST algorithms
 - Non optimality of the EDF and LST algorithms
 - Challenges in Validating timing constraints in priority driven Systems

- * Clock Driven Scheduling
 - Notations and assumptions
 - Static , Timer-Driven Scheduler
 - General Structure of cyclic schedules
 - Cyclic Executives
 - Improving the average response time of the aperiodic jobs
 - Scheduling sporadic jobs
 - Practical Considerations and Generalizations
 - Prons and Cons of Clock-Driven Scheduling

- * Priority Driven Scheduling Of Periodic Tasks
 - Static Assumption
 - Fixed Priority Versus Dynamic Priority Algorithms
 - Maximum Schedulable Utilization
 - Optimality of the RM and DM algorithm

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- A Schedulability test for fixed priority tasks with Short response times
- * Resources and Resource access control
 - Assumptions on resources and their usage
 - Effects of Resource contention and resource access Control
 - Nonpreemptive critical sections
 - Basic Priority-Inheritance Protocol
 - Basic Priority Ceiling Protocol
 - Stack based ,Priority Ceiling (Ceiling-Priority) Protocol
 - Use of Priority Ceiling Protocol in Dynamic Priority Systems
 - Preemption-Ceiling Protocol
 - Controlling access to Multiple unit resources
- * Operating Systems
 - Overview
 - Time services and Scheduling mechanisms
 - Memory Management

Book : Real Time Systems
By Jane W.S. Liu(Pearson Education)

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IT 602: ELECTIVE – I: DIGITAL SIGNAL PROCESSING

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

1. Discrete Time Signals & System: Discrete–time signals, Discrete–time systems, Analysis of discrete-time LTI systems, Discrete-time systems described by differential equations, Implementation of discrete-time systems, Correlation of discrete-time systems
2. Z-Transform: Definition and Properties of Z-transform, Rational Z-transforms, Inverse Z-transform, one-sided Z-transform, Analysis of LTI systems in Z-domain
3. Frequency Analysis of Signals and Systems: Frequency analysis: Continuous time signals and Discrete-time signals, Properties of the Fourier transform for discrete-time signals, Frequency domain characteristics of LTI systems, LTI system as a frequency selective filter, Inverse systems and deconvolution
4. Discrete Fourier Transform: Frequency domain sampling, Properties of DFT, Linear filtering method based on DFT, Frequency analysis of signals using DFT, FFT algorithm, Applications of FFT, Goertzel algorithm, Quantisation effects in the computation of DFT
5. Implementation of Discrete Time Systems: Structure of FIR systems, Structure of IIR systems, quantization of filter coefficients, round-off effects in digital filters
6. Design of Digital Filters: Design of FIR filters, Design of IIR filters from analog filters, frequency transformations, Design of digital filters based on least-squares method digital filters from analogue filters, Properties of FIR digital filters, Design of FIR filters using windows, Comparison of IIR and FIR filters, and Linear phase filters.
7. Introduction to DSP co-processors: TMS 320C40/50, Analog Devices.
8. Applications : Image processing, Control, Speech, Audio, Telecommunication

Textbook

1. J.G. Proakis, “*Introduction to Digital Signal Processing*”, PHI
- Oppenheim and Schaffer, “*Discrete Time Signal Processing*”

References

1. S.K. Mitra, “*Digital Signal Processing*”, TMH.
2. T.J. Cavicchi, “*Digital Signal Processing*”, John Wiley.
3. L.C. Ludeman,” *Fundamentals Of Digital Signal Processing*”, John Wiley.
4. E.C. Ifeachor, B.W. Jervis, “*Digital Signal Processing*”, Pearson Education.
5. S Sallivahanan, “*Digital Signal Processing*”, TMH.
6. Ashok Ambardar, “*Analog and Digital Signal Processing*”, Thompson Learning.

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IT 606: ELECTIVE – II: WIRELESS COMMUNICATION & MOBILE COMPUTING

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

UNIT II TELECOMMUNICATION NETWORKS

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.

UNIT III WIRELESS LAN

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

UNIT IV MOBILE NETWORK LAYER

Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.

UNIT V TRANSPORT AND APPLICATION LAYERS

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

TEXT BOOKS

1. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3- Unit II chap 4,5 &6-Unit III Chap 7.Unit IV Chap 8- Unit V Chap 9&10.)
2. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)

REFERENCES

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003.
3. Hazysztof Wesolowshi, "Mobile Communication Systems", John Wiley and Sons Ltd, 2002.

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IT 606: ELECTIVE – II: WEB TECHNOLOGY & PROGRAMMING

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

UNIT - I : Introduction to WEB Technology, TCP/IP, Protocols, Telnet, Electronic Mail (Email) File Transfer Protocol (FTP), Word Wide Web, Domain Name System (DNS), Uniform Resource Locator (URL)

HTML Common tags - List, Tables, images, forms, Frames; Cascading Style sheets.

UNIT - II : Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT - III : XML : Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT - IV : Java Beans : Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's.

UNIT - V : Web Servers : Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT - VI : Introduction to JSP : The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat

UNIT - VII : JSP Application Development : Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations.

UNIT - VIII : Database Access : Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page, Introduction to struts framework..

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TEXT BOOKS :

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech(UNIT 1,2,3).
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH (Chapters: 19, 20, 21, 22, 25, 27) (UNIT 4).

REFERENCES :

1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly for chap 8.
3. Murach's beginning JAVA JDK 5, Murach, SPD
4. An Introduction to web Design and Programming –Wang-Thomson
5. Web Applications Technologies Concepts-Knuckles,John Wiley
6. Programming world wide web-Sebesta,Pearson
7. Building Web Applications-NIIT,PHI
8. Web Warrior Guide to Web Programmimg-Bai/Ekedaw-Thomas
9. Beginning Web Programming-Jon Duckett WROX.
10. Java Server Pages, Pekowsky, Pearson.
11. Java Server Pages –Hans Bergsten, SPD O'Reilly (UNITs 5,6,7,8).

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SEMESTER – VII

IT 701: PARALLEL PROCESSING

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical	Theory Hrs	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

Introduction to Parallel Processing, Architectural Classification and Techniques

Arithmetic and Instruction Pipelines, Pipelining Hazard And Scheduling Theory, Super Scalar Architectures, Asynchronous Pipelines

Interconnection Network, Hyper Cubes, Shuffle Exchanges, Tree, Meshes and Butterfly Networks, Parallel Algorithm For Linear Algebra, Sorting, Fourier Transformation. Systolic Arrays.

Vector Processors.

Shared Memory Multiprocessor System

Data Flow Architectures

Parallel Processing - Software Issues, Operating System For Parallel

Processor.

Selected Case Studies For Parallel Computing Systems.

REFERENCE BOOKS:

- 1: Computer Architecture And Quantitative Approach,
{By John L. Hennessy And David A. Patterson}
Morgan Kaufman Publishers, Inc 1990.
- 2: Computer Architecture And Parallel Processing,
{By Kai Hwang And Faye A. Briggs}
Mcgraw Hill International Editions, 1985.
- 3: Computer Structure; Principles And Examples,
{By D.P.Siewiorek, C.G.Bell,A Newell}
Mcgraw Hill, 1982.

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IT702: SOFTWARE ENGINEERING

Teaching Scheme		Examination Scheme				
Theory Hrs.	Tutorial	Theory Hrs	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	1	3	100	-	25	125

- Introduction of Software Engineering
- Requirements Engineering
- Structured System Design
- Data Oriented Analysis & Design
- Analysis & Design of Real Time Systems
- Software Quality Assurance
- User Interface Design
- Software Complexity & Reliability
- Software Project Management

TEXTS/REFERENCES

1. Software Engineering : A Practitioner's Approach,
{By Pressman R.S.}
Mcgraw Hill.
2. Fundamentals Of Software Engineering,
{By Ghezzi C. Jazayeri M. And Mandrioli D.}
Prentice Hall.
3. Software Engineering : The Production Of Quality Software.
{ByPfleedger S.L.}
4. Software Engineering, An Industrial Approach Vol. I ,
{By Radice R. A. And Phillips R.W }
Prentice Hall.
5. S.R. Software Engineering, Aksen Associates Incorporated Publishers.
6. A Spiral Model Of Software Development And Enhancement,
{By Boehm B.W.}
Ieee Computer.
7. Software Engineering Concepts,
{By Fairely R.}
Mcgraw Hill.
8. Software Engineering,
{By Sommerville I.}
Addision-Wesley.

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IT703: DISTRIBUTED OPERATING SYSTEMS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical	Theory Hrs	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	2	3	100	25	25	150

INTRODUCTION TO DISTRIBUTED COMPUTING. Distribution Of Data Control: Clock Synchronization, Distributed Termination Problem, Load Distribution, Distributed Elections, Agreement Problem. Dead-Looks In Distributed Systems, Introduction To Fault-Tolerant Computing

HIGH LEVEL LANGUAGE SUPPORTS FOR DISTRIBUTED COMPUTING : Message Passing Primitives, Atomic Actions, Remote Procedure Call Mechanisms. Implementation Of These Features. Case Study Of Some Languages Like Occam li, Linda.

FORMAL DEVELOPMENT AND VERIFICATION OF DISTRIBUTED ALGORITHMS.

TEXTS/REFERENCES :

1. DISTRIBUTED SYSTEMS, CONCEPTS AND DESIGN,
{By J.DOLLIMORE, T.KINDBERG}
ADDISON WESLEY, 2ND ED. 1994.
2. INTRODUCTION TO DISTRIBUTED ALGORITHMS,
{By G.TEL}
CAMBRIDGE UNIVERSITY PRESS, 1994.
3. PROGRAMME VERIFICATION, 1991.
{By K.R.APTE}
4. DISTRIBUTED SYSTEM, ADDISON WESLEY, 1989.
{By S.MULLENDER (ED)}
5. ET.AL. DISTRIBUTED COMPUTING : CONCEPT AND IMPLEMENTATIONS,
{By P.L.MCENTRE}
IEEE PRESS, 1984.
6. DISTRIBUTED COMPUTER SYSTEMS,
{By Y. PARKAR (ED)}
ACADEMIC PRESS, 1983.
7. DISTRIBUTED SYSTEMS : ARCHITECTURE AND APPLICATIONS : AN ADVANCE COURSE,
{By B.W.LAMPSON (ED)}
SPRINGER-VERLAG. 1981.
8. FAULT-TOLERANT DISTRIBUTED COMPUTING,
{By B.SIMON AND A SPECTOR (EDS)}
SPRINGER, 1990.
9. RESEARCH PAPER FROM SOME CURRENT JOURNALS.

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IT704: ERP-SCM-CRM

Teaching Scheme		Examination Scheme				
Theory Hrs.	Tutorial	Theory Hrs	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
3	1	3	100	-	25	125

- 1 E-Commerce To E-Business
Flexible Business Design, Definition Of Value, E-Business Communities, Customization And Integration, E-Business Architecture
- 2 Business Engineering
Customer Relationship Management
Business Process Model,
Customer Centric Business,
Pre Order, Point Of Order And Post Order Customer Support
Supply Chain Management
Business & Technology Forces - Driving Needs For SCM
Managing Order Acquisition Process
Elements Of SCM
- 3 ERP - Introduction, The E-Business Backbone, Evolution, Definition Advantages, Business Modeling,
- 4 ERP And Related Technologies
BPR - Business Process Reengineering
MIS - Management Information System
DSS - Decision Support System
EIS - Executive Information System
Data Warehousing - Data Mining
OLAP - Online Analytical Processing
- 5 ERP - Manufacturing Perspective
MRP - Material Requirement Planning
BOM - Bill Of Material
MRP - Manufacturing Resource Planning
DRP - Distributed Requirement Planning
PDM - Product Data Management
MTO - Make To Order And MTS - Make To Supply
ATO - Assemble To Order ETO - Engineer To Order
CTO - Configure To Order
- 6 ERP Modules
Finance, Plant Management, Quality Management, Material Management
- 7 ERP Implementation Life Cycle
Pre-Evaluation Screening, Package Evaluation, Project Planning, Gap Analysis, Reengineering, Configuration, Implementation Team Training, Testing, Going Live, End-User Training, Maintenance

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Practical and Term work

The Practical and Term work will be based on the topics covered in the syllabus.

Text Book/References Book(s) :-

- 1 E-Business Roadmap For Success By Dr. Ravi Kalakota
Marcia Robinson Addison Wesley
- 2 Enterprise Resource Planning Concepts And Practice, BY Vinod Kumar Garg
- 3 N.K. Venkitakrishnan, PHI Enterprise Resource Planning By Alexis Leon
Tata Mcgraw Hill
- 4 Customer Relationship Management Essentials
John, G And Thomsan Boehm, PHI

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IT705: Elective : III

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical	Theory Hrs	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

Elective III :

1. Data Compression and Security

1. Basics of data compression, Coding and modeling, Fixed and variable size coding, Different models, lossy and lossless data compression, Static and dynamic modeling, Concepts of information theory and entropy.
2. Huffman coding, prefix coding, instantaneous and uniquely decodable codes, Adaptive Huffman Algorithm, Basics of Arithmetic coding, Arithmetic coding process, Difficulties in Arithmetic coding
3. Dictionary based compression, Static and dynamic dictionaries, sliding window concepts, various dictionary based methods : LZ77, LZ78, LZSS. Various utilities using dictionary based compression.
4. Overview of the compression standards and study of JPEG
5. Conventional Encryption Model, Conventional Encryption Techniques, Simplified Des, Block Cipher Principles, Data Encryption Standards, Differential And Linear Cryptography Principles, Block Cipher Design Principles, Modes Of Operations, Algorithms Like Triple Des, International Data Encryption Algorithm, Characteristics Of Advanced Symmetrical Block Cipher, Issues Of Conventional Encryption Like Traffic Distribution, Random Number Generation, Key Distribution
6. Public Key Cryptography : Principles Of Public-Key Cryptography, Rsa Algorithm, Key Management, Elliptic Curve Cryptography, Diffie-Hellman Key , Prime And Relative Prime Numbers,
7. Message Authentication And Hash Functions, Authentication Requirement, Functions, Message Authentication Code, Hash Functions, Security Of Hash Functions And Macs, Md5 Message Digest Algorithm, Secure Hash Algorithm,
8. Digital Signatures, Authentication Protocols, Digital Signature Standards, Application Authentication Techniques Like Kerberos, X.509 Directory Authentication Services, Active Directory Service Of Windows@ Nt/Windows @ 2000

Practicals and Term Work:

- Implementation of various compression methods, encryption techniques
- Studying and implementing practicals based on Java Cryptography Extension and Key Management tool

Text Books :

1. "Data Compression", Khalid shayood, Morgan Kaufmann
2. "Cryptography And Network Principles and Practices"
Second Edition, William Stallings, Pearson Education/PHI

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2. Formal Language and Automata Theory

- 1 Concept of Automata : Review Of Mathematical Terms And Theory
Basic Mathematical Notations And Set Theory, Logic, Functions And Relations, Alphabets, Language Definitions, Mathematical Inductions And Recursive Definitions

- 2 Finite Automata
Regular Expressions and Finite Automata, Non Determinism, \wedge -Transitions, Conversion from NFA to FA, NFA- \wedge to NFA and equivalence of three, Kleene's Theorem, Regular And Non Regular Languages – pumping lemma, Automata with output-Moore machine, Mealy machine

- 3 Cfg (Context Free Grammar)
Introduction To Cfg, Regular grammar, Bacos Naur Form(BNF), Left most & Right most derivations, parse trees, ambiguity, Normal Form – CNF

- 4 Pushdown Automata, CFL And NCFL
Introduction To PDA, Definition, Picture representation of PDA, PDA Corresponding To CFG, CFG Corresponding To PDA, pumping lemma for CFL, Decisions Problems And CFL

- 5 Turing Machines
Introduction, Definition Of Turing Machine, Model Of Computation And Church Turning Thesis, computing functions with TM, Tm And Language Acceptors, Combining TM, Variations Of Tm, Non Deterministic TM, Universal TM, Recursively and Enumerable Languages, Context sensitive languages and Chomsky hierarchy, Halting problem

- 6 Computable Functions
Partial, total, constant functions, Primitive Recursive Functions, Bounded Minimalisations, Regular function, Recursive Functions

Text Books:

- 1 Introduction To Languages And Theory Of Computation By John C. Martin, Third Edition, TMH
- 2 An introduction to automata theory and formal languages By Adesh K. Pandey, Publisher : S.K. Kataria & Sons

Reference book :

Introduction to computer theory By Deniel I. Cohen , Joh Wiley & Sons, Inc.

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IT706: Elective : IV

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical	Theory Hrs	Theory Marks	Pract./Viva Marks	Termwork Marks	Total Marks
4	2	3	100	25	25	150

Elective IV:

1. Artificial Intelligence & Expert System

Overview Of Artificial Intelligence.

Formalized Symbolic Logic Rule Based Dedication & Expert Systems, Languages For Ai Problem Solving,

Structured Knowledge Representation,

Searching And Matching,

Expert System Architecture & Tools ,

Natural Language Processing, Learning Systems

TEXTS/REFERENCES :

1. Artificial Intelligence, {By Rich E.} Mc-Graw Hill.
2. Principles Of Artificial Intelligence, {By N.J.Nilsson} Kaufmann.
3. Introduction To Ai, {By D.W. Patterson} Addison Wesley.
4. Introduction To Ai, {By Charmiak And M.Dermalt} Addison-Wesley.
5. The Engineering Of Knowledge Based Systems Theory And Practice, {By A.J.Gongalez & D.D. Dankel} Prentice Hall.
6. Artificial Intelligence And The Design The Expert Systems, {By G.F.Lager And W.A.Stubblefield} Benjamin Kummings.
7. A Guide To Expert Systems, {By Waterman } Addison-Wesley.
8. Developing Knowledge - Based Systems Using An Expert Systems Shell, {By Mockler, R.J.} Maxwell Machmillan.
9. Expert System, Applications In Engineering And Manufacturing, {By Badiran, A.B} Prentice Hall.
10. Introduction To Expert Systems. The Development And Implementation Of Rule Based Expert Systems, {By Lgnizio, J.P.} Mc-Graw Hill.
11. Expert Systems Design And Development, {By Durkin, J.} Macmillan.
12. Decision Support & Expert Systems Management Support Systems, {By Turban, F } Macmillan.

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2. Data Warehousing and Data Mining

Data Warehousing:

1. Overview And Concepts: Need for data warehousing, Basic elements of data warehousing, Trends in data warehousing.
2. Planning And Requirements: Project planning and management, Collecting the requirements.
3. Architecture And Infrastructure: Architectural components, Infrastructure and metadata.
4. Data Design And Data Representation: Principles of dimensional modeling, Dimensional modeling advanced topics, data extraction, transformation and loading, data quality.
5. Information Access And Delivery: Matching information to classes of users, OLAP in data warehouse, Data warehousing and the web.
6. Implementation And Maintenance: Physical design process, data warehouse deployment, growth and maintenance.

Data Mining:

1. Introduction: Basics of data mining, related concepts, Data mining techniques.
2. Data Mining Algorithms: Classification, Clustering, Association rules.
3. Knowledge Discovery : KDD Process
4. Web Mining: Web Content Mining, Web Structure Mining, Web Usage mining.
5. Advanced Topics: Spatial mining, Temporal mining.
6. Visualisation : Data generalization and summarization-based characterization, Analytical characterization: analysis of attribute relevance, Mining class comparisons: Discriminating between different classes, Mining descriptive statistical measures in large databases
7. Data Mining Primitives, Languages, and System Architectures: Data mining primitives, Query language, Designing GUI based on a data mining query language, Architectures of data mining systems
8. Application and Trends in Data Mining: Applications, Systems products and research prototypes, Additional themes in data mining, Trends in data mining

Text Books:

1. Paulraj Ponnian, "Data Warehousing Fundamentals", John Wiley.
2. M.H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education.
3. Han, Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann

References:

1. Ralph Kimball, "The Data Warehouse Lifecycle toolkit", John Wiley.
2. M Berry and G. Linoff, "Mastering Data Mining", John Wiley.
3. W.H. Inmon, "Building the Data Warehouses", Wiley Dreamtech.
4. R. Kimpall, "The Data Warehouse Toolkit", John Wiley.
E.G. Mallach, "Decision Support and Data Warehouse syste

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SEMESTER – VIII

Code	Subject	Teaching Scheme (Hrs.)			Examination Scheme				
		Theory	Practica I	Total	Theory		Pract. Marks	TW Marks	Total
					Hrs	Marks			
IT801	Project and Seminar								
	(a) Continuous Assessment	-	06	06	-	-	100	-	100
	(b) Project	-	24	24	-	-	200	100	300
Total Contact Hours		-	30	30	Grand Total				400

Guide line for Project and Seminar :

Project must be Computer Engineering Syllabus based.

Duration of project work should be of 18 Weeks in the Institute .

- 1 Teacher may be sent to the industry for interaction with industrial guide.
- 2 Project work and progress may evaluated through seminars at the regular intervals.
- 3 Project can be taken up at the Institute .
- 4 Students have to carry out the project work in minimum group of three students.
- 5 Individual project work will not be allowed.

Instruction for practical examination of project work.

- 1 Only presentation of project work will not be accepted.
- 2 Students must demonstrate the working of project.
- 3 Students have to show the code of the project.
- 4 Students have to submit code of the project.
- 5 Students must use the actual data for demonstration of the project.
- 6 Dummy data will not be allowed for demonstration of project.