

KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE 641 049
(An Autonomous Institution under Anna University, Coimbatore)

CURRICULUM 2009 (CBCS SYSTEM)

B.E. COMPUTER SCIENCE AND ENGINEERING

SEMESTER – I

Code No.	Course Title	L	T	P	C
THEORY					
ENG101	Technical English	2	1	0	3
MAT101	Engineering Mathematics – I	3	1	0	4
PHY101	Engineering Physics	3	0	0	3
CHY101	Engineering Chemistry	3	0	0	3
MEC101	Engineering Graphics	2	0	3	3
CSE101	Programming with C	3	1	0	4
GHE101	Human Excellence: Personal Values – I	1	0	0	1
PRACTICAL					
PHY401	Physics Laboratory	0	0	3	1
MEC401	Engineering Practices Laboratory	0	0	3	1
CSE401	Programming Laboratory	0	0	3	1

32 hrs 24 Credits

SEMESTER – II

Code No.	Course Title	L	T	P	C
THEORY					
ENG102	English For Pragmatic Usage	1	0	2	2
MAT103	Engineering Mathematics II	3	1	0	4
PHY104	Materials Science	3	0	0	3
EEE231	Electrical and Electronic circuits	3	1	0	4
CSE102	Data Structures	3	1	0	4
CSE103	Object Oriented Programming & C++	3	0	0	3
PRACTICAL					
EEE431	Electronic Devices & Circuits Laboratory	0	0	3	1
CSE402	Data Structures Laboratory	0	0	3	1
CSE403	Object Oriented Programming Laboratory	0	0	3	1
GHE102	Human Excellence: Personal Values – II	0	0	2	1

32 hrs 24 Credits

SEMESTER III

Code No.	Course Title	L	T	P	C
THEORY					
MAT105	Transform Methods in Engineering	3	1	0	4
CSE104	Design and Analysis of Algorithms	3	0	0	3
CSE105	Computer Architecture	3	1	0	4
CSE106	System Software	3	0	0	3
ECE103	Digital Electronics	3	0	0	3
CHY107	Environmental Science and Engineering	3	0	0	3
PRACTICAL					
CSE404	Algorithms Laboratory	0	0	3	1
ITY401	Digital Laboratory	0	0	3	1
CSE405	System Software Laboratory	0	0	3	1
GHE103	Human Excellence: Family Values	0	0	2	1

31 hrs 24 Credits

SEMESTER IV

Code No.	Course Title	L	T	P	C
THEORY					
MAT106	Probability and Applied Statistics	3	1	0	4
CSE107	Object Oriented Analysis and Design	3	1	0	4
ITY102	Microprocessors	3	1	0	4
ITY103	Database Management Systems	3	0	0	3
	Technical Arts Elective	3	0	0	3
	Elective - I	3	0	0	3
PRACTICAL					
ITY402	Microprocessors Laboratory	0	0	3	1
ITY403	Database Management Systems Laboratory	0	0	3	1
	Elective – I Laboratory	0	0	3	1
GHE104	Human Excellence: Professional Values	0	0	2	1

32 hrs 25 Credits

Code No.	Course Title	L	T	P	C
Technical Arts Electives					
GSS101	Professional Ethics	3	0	0	3
GSS105	Entrepreneurship Development	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective – I					
CSE108	Design of Visual Interfaces	3	0	0	3
CSE109	Computer Graphics	3	0	0	3
CSE110	Artificial Intelligence	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective – I Lab					
CSE406	Visual Programming Laboratory	0	0	3	1
CSE407	Computer Graphics Laboratory	0	0	3	1
CSE408	Artificial Intelligence Laboratory	0	0	3	1

SEMESTER V

Code No.	Course Title	L	T	P	C
THEORY					
CSE111	Theory of Computation	3	1	0	4
CSE112	Operating Systems	3	0	0	3
CSE113	Software Engineering	3	0	0	3
ITY104	Computer Networks	3	0	0	3
ITY105	Internet and Java Programming	3	0	0	3
	Elective II	3	0	0	3
PRACTICAL					
CSE409	Operating Systems Laboratory	0	0	3	1
ITY404	Internet and Java Programming Laboratory	0	0	3	1
ENG401	Communication Skills Laboratory	0	0	3	1
GHE105	Human Excellence: Social Values	0	0	2	1

30 hrs 23 Credits

Code No.	Course Title	L	T	P	C
Elective II					
CSE114	Knowledge Based Decision Support Systems	3	0	0	3
CSE115	Advanced Database Technologies	3	0	0	3
ECE273	Analog and Digital Communication	3	0	0	3

SEMESTER VI

Code No.	Course Title	L	T	P	C
THEORY					
MAT108	Numerical Methods	3	1	0	4
ITY112	Principles of Compiler Design	3	1	0	4
	Engineering Sciences Elective -I	3	0	0	3
	Elective III	3	0	0	3
	Elective IV	3	0	0	3
	Elective V	3	0	0	3
PRACTICAL					
CSE410	Software Engineering Laboratory –I	0	0	3	1
ITY408	Network Laboratory	0	0	3	1
	Elective – III Laboratory	0	0	3	1
GHE106	Human Excellence: National Values	0	0	2	1

31 hrs 24 Credits

Code No.	Course Title	L	T	P	C
Elective III					
CSE116	Computational Intelligence	3	0	0	3
CSE117	Digital Image Processing	3	0	0	3
CSE118	Multimedia Systems	3	0	0	3
ITY108	Advanced Java Programming	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective III Lab					
CSE411	Computational Intelligence Laboratory	0	0	3	1
CSE412	Digital Image Processing Laboratory	0	0	3	1
CSE413	Multimedia Systems Laboratory	0	0	3	1
ITY405	Advanced Java Programming Laboratory	0	0	3	1

Code No.	Course Title	L	T	P	C
Elective IV & V					
CSE119	Component Based Technology	3	0	0	3
CSE120	Multimedia Databases	3	0	0	3
CSE121	Open Source Software	3	0	0	3
CSE122	C# and .NET Programming	3	0	0	3
CSE123	Embedded Systems	3	0	0	3
ITY110	Cryptography & Network Security	3	0	0	3
ITY111	TCP/IP & Socket Programming	3	0	0	3
ITY113	Digital Signal Processing	3	0	0	3

Code No.	Course Title	L	T	P	C
Engineering Sciences Electives –I					
GSS108	Operations Research	3	0	0	3
CSE124	Business Process Models	3	0	0	3
CSE125	Enterprise Resource Planning	3	0	0	3

SEMESTER VII

Code No.	Course Title	L	T	P	C
THEORY					
ITY107	Mobile Communications	3	0	0	3
GSS104	Principles of Management and Total Quality Management	3	0	0	3
	General Elective	3	0	0	3
	Elective VI	3	0-1	0	3-4
	Engineering Science Elective –II	3	0	0	3
	Elective VII	3	0	0	3
PRACTICAL					
CSE414	Software Engineering Laboratory – II	0	0	3	1
CSE415	Mini Project Review #	0	0	2	1
	Elective VI Laboratory	0	0	3	1
GHE107	Human Excellence: Global Values	0	0	2	1

Students should do the mini project work during the 3rd year summer vacation period

28-29 hrs 22-23 Credits

Code No.	Course Title	L	T	P	C
General Electives					
GSS106	Governance in India	3	0	0	3
GSS107	Indian Economy	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective VI					
CSE126	Data Compression Techniques	3	0	0	3
CSE127	UNIX Internals	3	0	0	3
ITY114	Web Technology	3	1	0	4
ITY117	Data Warehousing and Data Mining	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective VI Lab					
CSE416	Data Compression Techniques Laboratory	0	0	3	1
CSE417	Data Warehousing and Data Mining Laboratory	0	0	3	1
CSE418	UNIX Internals Laboratory	0	0	3	1
ITY410	Web Technology Laboratory	0	0	3	1

Code No.	Course Title	L	T	P	C
Engineering Sciences Elective –II					
CSE128	System Modeling & Simulation	3	1	0	4
MAT111	Graph Theory	3	1	0	4
MAT112	Partial Differential Equations and their Solution Methodologies	3	1	0	4

Code No.	Course Title	L	T	P	C
Elective VII					
CSE129	Theory of Programming Languages	3	0	0	3
ITY115	High Speed Networks	3	0	0	3
ITY116	XML and Web Services	3	0	0	3
ITY118	Adhoc and Sensor Networks	3	0	0	3
ITY121	Distributed Systems	3	0	0	3

SEMESTER VIII

Code No.	Course Title	L	T	P	C
THEORY					
	Elective VIII	3	0	0	3
	Elective IX	3	0	0	3
	Elective X	3	0	0	3
PRACTICAL					
CSE419	Project Work	0	0	18	6

27 hrs 15 Credits

Code No.	Course Title	L	T	P	C
Electives VIII, IX & X					
CSE130	Service Oriented Architecture	3	0	0	3
CSE131	Grid Computing	3	0	0	3
CSE132	Parallel Computing	3	0	0	3
CSE133	Semantic Web	3	0	0	3
CSE134	Natural Language Processing	3	0	0	3
CSE135	E-Commerce	3	0	0	3
CSE136	Software Project Management	3	0	0	3
CSE137	Information Retrieval	3	0	0	3
CSE138	Human Computer Interaction	3	0	0	3
CSE139	Bioinformatics	3	0	0	3
ITY119	Software Quality Assurance and Testing	3	0	0	3
ITY122	Information Security	3	0	0	3

Total Credits : 181-182

KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE-6
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CURRICULUM 2009

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SEMESTER - I

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THEORY					
ENG101	Technical English	2	1	0	3
MAT101	Engineering Mathematics – I	3	1	0	4
PHY101	Engineering Physics	3	0	0	3
CHY101	Engineering Chemistry	3	0	0	3
MEC101	Engineering Graphics	2	0	3	3
CSE101	Programming with 'C'	3	1	0	4
GHE101	Personal Values -I	1	0	0	1
PRACTICAL					
PHY401	Physics Laboratory	0	0	3	1
MEC401	Engineering Practices Laboratory	0	0	3	1
CSE401	Programming Laboratory	0	0	3	1

TOTAL PERIODS – 32

TOTAL CREDIT – 24

SEMESTER - II

Code No.	Course Title	L	T	P	C
THEORY					
ENG102	English For Pragmatic Usage	1	0	2	2
MAT103	Engineering Mathematics – II	3	1	0	4
PHY104	Materials Science	3	0	0	3
EEE231	Electrical and Electronic Circuits	3	1	0	4
CSE102	Data Structures	3	1	0	4
CSE103	Object Oriented Programming & C++	3	0	0	3
PRACTICAL					
EEE431	Electronic Devices and Circuits Laboratory	0	0	3	1
CSE402	Data Structures Laboratory	0	0	3	1
CSE403	Object Oriented Programming Laboratory	0	0	3	1
GHE102	Personal Values -II	0	0	2	1

TOTAL PERIODS – 32

TOTAL CREDIT – 24

ENG101 TECHNICAL ENGLISH
(Common to all branches of Engineering and Technology)

L	T	P	C
2	1	0	3

OBJECTIVES

- To assist learners enhance their technical jargon and to impart knowledge about the application of technical English.
- To familiarize learners with different rhetorical functions of technical syntax
- To inculcate written proficiency in commercial and business context
- To improve the competency of professional writing with special reference to career related situations
- To provide pragmatic exposure to technical correspondence.

UNIT – I FOUNDATIONS OF TECHNICAL COMMUNICATION 5

Technical Jargon – Formation of engineering & technical vocabulary – Affixing – Derivational jargon – Inflectional Morphemes – Nominal Compounds & technical vocabulary – Acronyms and abbreviations, Concord – Agreement and Government of scientific / technical syntax – Tense – Impersonal passive structure used in engineering & technical texts, Modal verbs, Infinitives and Gerunds

UNIT - II TECHNICAL SYNTAX 5

Kinds of Technical Syntax – Causal expressions – Purpose and functional expressions, Conditional syntax – Four types, Reported speech – Imperative structure – Instructions in industrial situation, Discourse markers – Equipment / Process description, Analytical writing – Writing a paragraph – Scientific text – Juxtaposed technical facts

UNIT – III CORRESPONDENCE IN CORPORATE SECTOR 9

Creating an advertisement, Transcoding – Graphics into text – Text into Charts / Tables – Bar charts – Pie Charts – Flow charts, Editing – Contextual occurrence of common errors – Syntactic & Semantic Errors – Preventive Parameters – General application of articles and preposition – Punctuation – Spelling – Tags – Interrogative structures – Proof reading

UNIT – IV TECHNICAL WRITING 5

Writing abstracts, Note making, Summarizing – Diction – Objective tone, Report writing – Techniques of writing a report – Kinds of Reports – Industrial Report – Project Proposals – Report on the status of a project – Report on the challenges of a project.

UNIT - V GENERAL CORRESPONDENCE 6

Modules of a letter – Official & Demi-Official Letters – Applying for Educational / Car / Home Loans – Internet connection – Joining Report – Leave letter – email correspondence – Industrial visit – Inplant Training – Letter to the Editor, Business Letters – Calling for a quotation – Placing Order – Letter of Complaint – Letter seeking Clarification – Acknowledging prompt / quality service

L: 30 T: 15 Total : 45

TEXT BOOK

1. Dhanavel.S.P, English and Communication Skills for students of Science & Engineering, Chennai: Orient Blackswan, 2009 (ISBN 13: 9788125037392)

REFERENCES

1. Rizvi Ashraf .M., Effective Technical Communication, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.
2. Seely John., The Oxford Guide to Writing and speaking, Oxford University Press, Chennai, 2006.
3. Devadoss K., Professional Communication for Engineers, Inder Publications, Coimbatore, 2009.
4. Devadoss K, & Malathy P., Enhance your Employability, Inder Publications, Coimbatore, 2009.

APPROVED

MAT101 ENGINEERING MATHEMATICS I
(Common to All Branches of Engineering & Technology)

L	T	P	C
3	1	0	4

OBJECTIVES:

On completion of the course the students are expected

- To know eigen values and eigen vectors and diagonalization of a matrix.
- To understand the concepts of three dimensional geometry including plane, straight line and sphere.
- To know about the geometrical aspects of curvature, evolute and envelope.
- To understand the concepts of partial differentiation, maxima and minima.
- To solve ordinary differential equations of certain types.

UNIT – I MATRICES

9

Eigen values and eigenvectors of a real matrix – Properties of eigen values and eigenvectors- Cayley - Hamilton theorem (excluding proof) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.

UNIT – II THREE DIMENSIONAL ANALYTICAL GEOMETRY

9

Equations of a plane – Equations of a straight line – Coplanar lines – Shortest distance between skew lines – Sphere – Plane section of a sphere – Orthogonal spheres.

UNIT – III GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS

9

Curvature – Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature –Evolutes – Envelopes.

UNIT – IV FUNCTIONS OF SEVERAL VARIABLES

9

Total derivative – Taylor's series expansion – Maxima and minima for functions of two variables – Constrained maxima and minima – Lagrange's multiplier method – Jacobians.

UNIT – V ORDINARY DIFFERENTIAL EQUATIONS

9

Linear equations of second order with constant coefficients – Euler's and Legendre's linear equations - Method of variation of parameters – Simultaneous first order linear equations with constant coefficients.

L: 45 ,T: 15 Total : 60

TEXT BOOK

1. Veerarajan T., Engineering Mathematics (for First Year) , Revised Edition, Tata McGraw Hill Pub. Co. Ltd., New Delhi, 2007.

REFERENCES

1. Kreyzig E., "Advanced Engineering Mathematics", John Wiley & Sons (Asia) Pvt, Ltd., Singapore, 8th Edition, 2001.
2. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, Delhi, 36th Edition, 2001.
3. Venkataraman M.K., "Engineering Mathematics", Volume - II, The National Pub. Co., Chennai, 2003.

4. Kandasamy P., Thilagavathy K., and Gunavathy K., “Engineering Mathematics”, S. Chand & Co., New Delhi, (Re print) 2008.
5. Arunachalam T., “Engineering Mathematics I”, Sri Vignesh Publications, Coimbatore. (Revised) 2009.

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PHY101 ENGINEERING PHYSICS
(Common to all branches of Engineering and Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

At the end of the course the students would be exposed to

- To impart fundamental knowledge in various engineering subjects and applications
- Design of acoustically good buildings
- Structure identification of engineering materials
- Non destructive techniques
- Interferometric techniques in metrology, communication and civil engineering
- Application of quantum physics to optical & electrical phenomena
- Application of lasers in engineering and technology.

UNIT – I ACOUSTICS AND ULTRASONICS

9

Classification of sound characteristics of musical sound, Loudness Weber Fechner law Decibel, Phon,-Reverberation Reverberation time, Derivation of Sabine's formula for reverberation time (Rate of Growth and Rate of Decay) Absorption coefficient and its determination - Factors affecting acoustics of buildings (Optimum reverberation time, Loudness, Focussing, Echo, Echelon effect, Resonance and Noise) and their remedies. Ultrasonic production Magnetostriction & piezoelectric methods - Detection Thermal and Piezoelectric methods, properties, Determination of velocity of ultrasonic waves in liquid using acoustic grating - Applications SONAR, Measurement of velocity of blood flow & movement of heart.

UNIT – II CRYSTALLOGRAPHY & NON-DESTRUCTIVE TESTING

9

Space lattice, unit cell, Bravais space lattices, Lattice planes, Miller indices Calculation of inter planar Distance, number of atoms per unit cell, Atomic radius, coordination number & packing factor for simple cubic, BCC, FCC and HCP structures NDT methods: Liquid penetrant method, Ultrasonic flaw detector, X-ray radiography & fluoroscopy. Thermography

UNIT – III WAVE OPTICS

9

Air wedge (theory and experiment) - testing of flat surfaces - Michelson interferometer, Types of fringes, Determination of wavelength of monochromatic source and thickness of a thin transparent sheet - Theory of plane, circularly and elliptically polarized light - quarter and half wave plates, production and analysis of plane, circularly and elliptically polarized light - Photo elasticity Birefringence - effect of a stressed model in a plane polariscope Isoclinic and isochromatic fringes Photo elastic bench

UNIT – IV QUANTUM PHYSICS

9

Planck's quantum theory of black body radiation (Derivations), Photo electric effect - Compton effect (derivation) and Experimental verification of Compton effect Schrödinger wave equation Time independent and time dependent equations (derivation), Physical significance of wave function, particle in a box (in one dimension) electrons in a metal.

UNIT – V LASER & FIBRE OPTICS

9

Einstein's coefficients (A & B), Nd-YAG laser, He-Ne laser, CO₂ laser, semiconductor laser - Homo-junction and Hetero-junction (only qualitative description) - Applications

Material processing, CD-ROM & Holography (Qualitative) Optical fibre- Principle and Propagation of light in optical fibres-Numerical aperture and acceptance angle-types of optical fibres Single and Multimode, step index & graded index fibres Applications - Fibre optics communication system, Fibre optic sensors(Displacement and temperature sensors), Medical endoscope.

L: 45, T : 15 Total :60

TEXT BOOK

1. Avadhanalu.M.N., & Kshirsagar.P.G., A textbook of Engineering Physics, S.Chand & Company Ltd, New Delhi, 2005.
2. Gaur R.K., & Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003.

REFERENCES

1. Rajendran V., & Marikani A., Applied Physics for Engineers, 3rd Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.
2. Gopal.S., Engineering Physics, Inder Publications, Coimbatore, 2006.
3. Arumugam M., Engineering Physics, 5th Edition, Anuradha Agencies, Kumbakonam, 2003.
4. Palanisamy P.K., Physics for Engineers, Vol.1 & Vol.2, 2nd Edition, Scitech publications, Chennai, 2003.

CHY101 ENGINEERING CHEMISTRY
(Common to all branches of Engineering and Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

- To develop a sound knowledge of theoretical and modern technological aspects of applied chemistry.
- To correlate the theoretical principles with application oriented studies.

UNIT – I ELECTROCHEMISTRY

9

Single electrode potential - standard electrodes (Hydrogen & calomel electrodes) - electrochemical series - Nernst equation and problems. Types of electrodes (Metal-metal ion electrode, metal -metal insoluble salt electrode, glass electrode) - determination of pH using glass electrode - application of emf measurements and problems - reversible and irreversible cell - Galvanic cell - Concentration cells - Kohlrausch law of independent migration of ions and its application - Conductometric titration - Polarization - Overvoltage - Decomposition potential.

UNIT – II ENERGY STORING DEVICES

9

Introduction - primary and secondary batteries (dry cells - alkaline batteries, lead acid storage cell, nickel - cadmium cell, lithium battery) - fuel cell (hydrogen and oxygen fuel cell) - photogalvanic cell.

Nuclear Energy Sources

Nuclear fission process - characteristics of nuclear fission - chain reactions - nuclear energy - nuclear reactors (light water nuclear power plant).

UNIT – III THERMODYNAMICS

9

Thermodynamics - thermodynamic processes (isothermal, isobaric, isochoric and adiabatic processes) - internal energy mathematical form of first law – enthalpy - limitation of first law - statement of second law of thermodynamics (Clausius and Kelvin) - definition of entropy - entropy change for a reversible process - entropy change for an isothermal expansion of an ideal gas and problems - definition of free energy and work function - Gibbs Helmholtz equation - applications and problems – Van't Hoff isotherm and isochore - applications and problems.

UNIT – IV SURFACE CHEMISTRY

9

Adsorption: Types of adsorption - adsorption of gases on solids - adsorption isotherm (Freundlich, Langmuir isotherms) - adsorption of solutes from solutions - applications role of adsorption in catalytic reactions - ion exchange adsorption - basic principles in adsorption chromatography.

UNIT – V SPECTROSCOPY

9

Beer Lambert's Law - colorimetric analysis - principles, instrumentation (block diagram only) - estimation of concentration of a solution by colorimetry - flame photometry - theory, instrumentation (block diagram only) and application – UV – Visible & IR spectroscopy - principles, instrumentation (block diagram only) and simple applications.

Total : 45

TEXT BOOK

1. Jain P.C. and Monika Jain, Engineering Chemistry, Dhanpat Rai Pub. Co. (P) Ltd., New Delhi, 14th edition, 2002.

2. Kuriacose J.C. and Rajaram J., Chemistry in Engineering and Technology, Vol. 1& 2 , Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 2005.

REFERENCES

1. Bahl B.S., Tuli G.D., and Arun Bahl, Essentials of Physical Chemistry, S.Chand & Co. Ltd., New Delhi, 2004.
2. Somorjai G A, Introduction to Surface Chemistry and Catalysis, John Wiley and Sons. Inc. New York, 1994.
3. Shaw D.J., Introduction to Colloid and Surface Chemistry, Butterworth-heinemann publishers, 1992.
4. Syed Shabudeen P.S., and Shoba U.S., Applied Engineering Chemistry, Inder publications, Coimbatore 2009.

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MEC101 ENGINEERING GRAPHICS**(Common to all branches of Engineering and Technology)**

L	T	P	C
2	0	3	3

OBJECTIVES

- To understand the principle of orthographic projection of points, lines, surfaces and solids.
- To understand the principle of section and development of solids.
- To understand the principle of Isometric and Perspective projections.
- To study the principle of free-hand sketching techniques.

UNIT- I PLANE CURVES, PROJECTION OF POINTS AND LINES 15

Importance of graphics in design process, visualization, communication, documentation and drafting tools, Construction of curves - ellipse, parabola, and hyperbola by eccentricity method only. Orthographic projection of points.

Projections of straight lines located in first quadrant - determination of true length and true inclinations.

UNIT -II PROJECTIONS OF SURFACES AND SOLIDS 15

Projections of plane surfaces - polygonal lamina and circular lamina, located in first quadrant and inclined to one reference plane., Projection of simple solids - prism, pyramid, cylinder and cone. Drawing views when the axis of the solid is inclined to one reference plane.

UNIT- III SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES 15

Sectioning of simple solids - prisms, pyramids, cylinder and cone. Obtaining sectional views and true shape when the axis of the solid is vertical and cutting plane inclined to one reference plane.

Development of lateral surfaces of truncated prisms, pyramids, cylinders and cones.

UNIT -IV PICTORIAL PROJECTIONS 15

Isometric projection, Isometric scale, Isometric views of simple solids, truncated prisms, pyramids, cylinders and cones.

Perspective projection of prisms and pyramids when its base resting on the ground by vanishing point method.

UNIT -V FREE-HAND SKETCHING 15

Free hand sketching techniques sketching of orthographic views from given pictorial views of objects, including free-hand dimensioning.

Sketching pictorial views from given orthographic views.

L: 30, P: 45 Total : 75**TEXT BOOK**

1. Basant Agrawal and CM Agrawal, Engineering Drawing, McGraw-Hill, New Delhi, First Edition, 2008
2. Venugopal K., and Prabhu Raja V., Engineering Graphics, New Age International (P) Limited, New Delhi , 2008.

REFERENCES

1. Natarajan K.V, Engineering Drawing and Graphics, Dhanalakshmi Publisher, Chennai, 2005.
2. Warren J. Luzadder and Jon. M.Duff, Fundamentals of Engineering Drawing, Prentice Hall of India Pvt. Ltd., New Delhi, Eleventh Edition, 2005.
3. Gopalakrishna K.R., Engineering Drawing (Vol. I & II), Subhas Publications, 2001.

APPROVED

L	T	P	C
3	1	0	4

OBJECTIVES

- To learn the basic concepts of computing.
- To know the methodology of problem solving.
- To develop skills in programming using C language.

UNIT-I BASICS OF COMPUTERS AND PROGRAMMING LANGUAGES 9

Components of a computer system – Hardware – Software - Problem solving techniques- Program control structures – Programming paradigms – Programming languages- Generations of programming languages -Language translators - Features of programming languages.

UNIT II C FUNDAMENTALS 9

Introduction to C –Overview of compilers and interpreters – Structure of a C program – Programming rules – Executing the program - **C declarations** – Introduction – C character set – Delimiters – C key words – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring variables – Initializing variables – Type conversion – Constant and volatile variables - **Operators and Expressions** – Introduction – Priority of operators and their clubbing- Comma and conditional operator- Arithmetic operators- Relational, Logical and Bitwise operators- **Input and Output in C**- Introduction – Formatted and Unformatted functions- Commonly used library functions- **Decision statements** – Introduction – *if*, *if-else*, nested *if-else*, *break*, *continue*, *goto*, *switch ()*, nested *switch ()*, *switch () case* and nested *if* statements - **Loop control statements**- Introduction- *for* loop, nested *for* loop,*while* loop, *do-while* loop, *do- while* statement with *while* loop

UNIT III FUNCTIONS AND ARRAYS 9

Functions – Introduction- Declaration of function and function prototypes-The return statement- Types of functions-Call by value and Call by reference-Function returning more values-Function as an argument- Function with operators - Function and decision statements-Function and loop statements-Functions with arrays and pointers- Recursion- Pointer to function- **Storage class** –Introduction- Automatic, External, Static and Register variables- **Arrays**- Introduction- Array initialization – Definition of array- Characteristic of array-One dimensional array - Predefined Streams - Two dimensional array - Three or multi-dimensional arrays – *scanf ()* and *sprintf ()* functions – Operation with arrays.

UNIT IV STRINGS AND POINTERS 9

Working with strings and Standard functions - Introduction - Declaration and initialization of string – Display of strings with different formats – String standard functions – **Pointers** – Introduction – Features of pointers – Pointer declaration – Arithmetic operations with pointers – Pointers and arrays – Pointers and two-dimensional arrays – Array of pointers – Pointers to pointer – Pointers and strings – Void pointers –**Dynamic memory allocation** – Dynamic memory allocation – Memory models – Memory allocation functions.

UNIT V STRUCTURE, UNION AND FILES

9

Structure and Union – Introduction – Features of structures – Declaration and initialization of structures – Structure within structure – Array of structures – Pointer to structure – Structure and functions – Typedef – Bit fields – Enumerated data type – Union – Calling BIOS and DOS services – Union of structures - **Files** – Introduction - Streams and file types – Steps for file operations – File I/O – Structures read and write – Other files functions – Searching errors in reading / writing files – Low level disk I/O – Command line arguments – Application of command line arguments – Environment variables – I/O redirection.

L: 45, T: 15 Total : 60

TEXT BOOK

1. ITL Education Solutions Limited, A N Kamthane, “Computer Programming “, Pearson Education (India), 2009.

REFERENCES

1. Byron S Gottfried, “Programming with C”, Second Edition, Schaum’s Outlines, Tata McGraw –Hill Publishing Company Limited, 2006.
2. E.Balagurusamy,”Programming in ANSI C”, Fourth Edition, TMH, 2007.

GHE101 PERSONAL VALUES - I**(Common to all branches of Engineering and Technology)**

L	T	P	C
1	0	0	1

UNIT – I**5**

Introduction – Importance's of Human Excellence – Objectives – Personal Values – definitions- purpose and Philosophy of Human life – Body, Mind and Soul – Physical exercises introductions.

UNIT – II**5**

Introduction - Need and Practice – Analysis of thought – origins of thought and its effect – what you think, you become – Refinement of desire – Physical exercises continuation – Meditations – I stage (Agni Initiation)

UNIT- III**5**

Anger management - What is Anger – Its evil effect - Neutralizations of anger– Practice – Worry – why to Worry – Eradications of worries – Method – Physical exercises – continuation – Meditation – II stage (Santhi Initiation)

Total : 15

PHY401 PHYSICS LABORATORY**(Common to all branches of Engineering and Technology)**

L	T	P	C
0	0	3	1

1. Torsional Pendulum determination of rigidity modulus of wire and moment of inertia of disc.
2. Non Uniform Bending - Young modulus determination
3. Viscosity- Determination of co-efficient of Viscosity of liquid by Poiseuilles flow
4. Lee s disc- Determination of thermal conductivity of a bad conductor
5. Air wedge- Determination of thickness of a thin wire
6. Determination of velocity of sound and compressibility of liquid - Ultrasonic interferometer.
7. Determination of specific resistance of given coil of wire – Carey Foster’s Bridge.
8. Spectrometer - Determination of wavelength of Hg source using Grating
9. Determination of wavelength of Laser using Grating and Particle size determination and acceptance angle in an optical fibre.
10. Determination of Band gap of semiconductor material.

Total : 45

MEC401 ENGINEERING PRACTICES LABORATORY
(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

A. CIVIL ENGINEERING

1. Carpentry

- Study of carpentry tools
- Preparation of T joint
- Preparation of dovetail joint

2. Plumbing

- Study of pipeline joints
- Preparation of plumbing line sketches for water supply.

B. MECHANICAL ENGINEERING

1. Fitting

- Study of fitting tools
- Preparation of L joint
- Preparation of square joint

2. Sheet Metal Working

- Study of sheet metal working tools
- Preparation of cone and tray

3. Welding

- Study of arc welding tools and equipment
- Preparation of butt joint

21

Group - II (Electrical & Electronics Engineering)

C. ELECTRICAL ENGINEERING PRACTICE

12

- Basic household wiring using switches, fuse, indicator-lamp, etc.,
- Preparation of wiring diagrams.
- Stair case light wiring.
- Tube light wiring
- Study of iron-box, fan with regulator, emergency lamp and microwave oven.

List of Experiments

1. Assembling simple electronic component on a small PCB and Testing.
2. Soldering simple electronic circuits and checking continuity.
3. Measurements using digital multimeter.
 - DC and AC voltage measurement
 - DC and AC current measurements.
 - Resistance Measurement.
 - Continuity measurement.
4. Testing of Electronic components
 - Resistors
 - Inductors and capacitors
 - Diodes (resistance in forward bias and reverse bias)
 - Transistors
5. Study of CRO and Function generator
 - Study of Panel Controls
 - Measurement of Amplitude, Frequency, phase difference

Total : 45

CSE401 PROGRAMMING LABORATORY

(Common to all branches of Engineering and Technology)

L	T	P	C
0	0	3	1

LIST OF EXERCISES

1. Practice sessions on the usage of Office package.
2. To find the biggest of 3 numbers.
3. To find whether the given number is an Armstrong number.
4. To find the roots of a quadratic equation.
5. To sum the individual digits of an integer.
6. To evaluate the sine series and to generate Fibonacci series.
7. To perform matrix operations
 - Calculation of row sum and column sum
 - To find the maximum and minimum number
 - Addition and multiplication
8. To perform string operations.
9. To check whether a given number is prime or not using functions(use all function prototypes)
10. To compare two strings using pointers.
11. Mark sheet processing using files.

Total : 45

ENG102 ENGLISH FOR PRAGMATIC USAGE
(Common to all B.E / B.Tech courses)

L	T	P	C
1	0	2	2

OBJECTIVES

To impart the reading comprehension through interpretative and analytic reading exercises, provide exposure to the learners on drafting letters and filling up several applications, improve the level of competency of public speaking with special reference to academic related situations besides, giving practical exposure to professional and formal speaking.

READING COMPREHENSION

10

1. Exercises to examine the reading comprehension capacity
2. reading for global understanding
3. Reading for specific information
4. Reading for Reviewing (Books, Articles)

TARGETTED WRITING

15

5. Writing Applications
 - 5.1 Opening an SB account and filling bank challans for various purposes
 - 5.2 Applying for a Passport
 - 5.3 Filling applications for competitive exams
 - 5.4 Applying for Medical Leave
6. Drafting Job Application Letters
 - 6.1 Writing Resume
7. Writing Statement of Purpose for pursuing higher studies abroad
8. Preparing Notices and Circulars
9. Booking train tickets Online
10. Thematic writing

PUBLIC SPEAKING

10

11. Appropriate stress and tonal variation
12. Accent neutralization and pronunciation improvement
13. Welcoming a gathering
14. Proposing a Vote of Thanks
15. Compering
16. Presenting one's perception on the picture given
17. Giving Seminars

KINESTHETICS & FORMAL SPEAKING

10

18. Assessing body language during presentation
19. Involving in constructive conversation
20. Assigning formal situations to enhance the style of telephonic conversation
21. Discriminating assertive and aggressive conversation
22. Power point presentations

Total : 45

TEXT BOOK

1. Rizvi Ashraf. M, Effective Technical Communication, Tata McGraw Hill Publishing Co., Ltd., New Delhi.

REFERENCES

1. Aruna Koneru , Professional Communication, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.
2. Devadoss, K & Malathy. P, Enhance your Employability, Inder Publications, Coimbatore, 2009

APPROVED

MAT103 ENGINEERING MATHEMATICS II
(Common To CSE, IT, TXT, FT & BT Branches)

L	T	P	C
3	1	0	4

OBJECTIVES

On completion of the course the students are expected

- To understand double and triple integrations and enable them to find area and volume using multiple integrals.
- To know the basics of vector calculus comprising gradient, divergence and curl and line, surface and volume integrals.
- To understand analytic function and its properties
- To understand linear, inverse, circular and bilinear transformations.
- To know the basics of residues, complex integration and contour integration.

UNIT – I MULTIPLE INTEGRALS

9

Double integration – Cartesian and polar coordinates – Change of order of integration – Area as a double integral – Triple integration in cartesian coordinates – Change of variables between cartesian and polar coordinates.

UNIT – II VECTOR CALCULUS

9

Gradient, divergence and curl – Directional derivative – Irrotational and Solenoidal vector fields - Green's theorem in the plane, Gauss divergence theorem and Stoke's theorem (excluding proofs) – Simple applications involving cubes and rectangular parallelopeds.

UNIT – III ANALYTIC FUNCTION

9

Functions of a complex variable – Analytic function – Necessary conditions, Cauchy Riemann equations in Cartesian coordinates and sufficient conditions (excluding proofs). Properties of analytic function – Construction of analytic function by Milne Thomson method.

UNIT – IV CONFORMAL MAPPING

9

Conformal mapping: $w = z + c$, cz and $w = cz + b$, $1/z$, z^2 , e^z , $\sin z$, $\cos z$ and Bilinear transformation – Critical points – Invariant points.

UNIT – V COMPLEX INTEGRATION

9

Cauchy's integral theorem and Cauchy's integral formula (excluding proofs) – Taylor's and Laurent's series expansions – Singularities – Classification – Residues – Cauchy's residue theorem (excluding proof) – Contour integration – Unit circle and semi-circular contours (excluding poles on real axis).

L: 45, T: 15 Total: 60

TEXT BOOK

1. Veerarajan T., "Engineering Mathematics" (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007.

REFERENCES

1. Kreyzig E., "Advanced Engineering Mathematics", John Wiley & Sons (Asia) Pvt, Ltd., Singapore, 8th Edition, 2001.

2. Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, Delhi, 36th Edition, 2001.
3. Kandasamy P., Thilagavathy K., and Gunavathy K., “Engineering Mathematics”, S. Chand & Co., New Delhi, (Re print) 2008.
4. Arunachalam, T., “Engineering Mathematics II”, Sri Vignesh Publications, Coimbatore. (Revised) 2009.

APPROVED

PHY104 MATERIALS SCIENCE

(Common to Electrical and Electronics Engineering, Electronics and Instrumentation, Computer Science Engineering & Information Technology)

L	T	P	C
3	0	0	3

OBJECTIVES

At end of the course students would be exposed to

- Conducting, super conducting, magnetic and dielectric materials in electrical devices.
- Semi conducting, optical and new engineering materials in switching and display devices, data storage.

UNIT – I CONDUCTING MATERIALS

9

Classical free electron theory of metals-electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy – Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I & Type II superconductors – High T_c superconductors - Applications – cryotron, magnetic levitation and squids.

UNIT – II SEMICONDUCTING MATERIALS

9

Origin or band gap in solids (Qualitative treatment only) - Concept of effective mass of an electron and hole – carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

UNIT – III MAGNETIC & DIELECTRIC MATERIALS

9

Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Determination of paramagnetic susceptibility of a solid Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy and magnetic disc drives – magnetic memories – Core memory and Bubble memory - dielectric materials – Electronic ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

UNIT – IV NANOTECHNOLOGY AND NEW ENGINEERING MATERIALS

9

Metallic glasses – preparation, properties and applications – shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications advantages and disadvantages of SMA – Nano materials - synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparticles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

UNIT – V OPTICAL MATERIALS

9

Optical properties of semiconductors – Excitons- Traps – colour centre – Types of colour centres – luminescence – fluorescence and phosphorescence - liquid crystal display – Dynamics scattering display – Twisted nematic crystal display – Non- linear materials –

second harmonic generation – optical mixing – optical phase conjugation – solitons, IC packaging materials.

Total : 45

TEXT BOOKS

1. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003
2. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003.

REFERENCES

1. Rajendran V. and Marikani A., “Materials Science” Tata McGraw Hill Publishing Company Limited, New Delhi, 2005
2. Gopal.S, “Materials Science” Inder Publications, Coimbatore, 2007.
3. Arumugam M, Materials Science 3rd Edition, Anuradha Agencies, Kumbakonam, 2003.
4. Palanisamy, P.K., Materials Science, 2nd Edition, Scitech Pub. India, Pvt., Ltd., Chennai, 2003

EEE231 ELECTRICAL AND ELECTRONIC CIRCUITS

L	T	P	C
3	1	0	4

UNIT- I DC CIRCUITS

6

Electrical quantities- SI units- Circuit elements- Ohm's law – Kirchoff's laws- DC series and parallel circuits – Simple problems.

UNIT- II AC CIRCUITS

12

Sinusoidal excitation- RMS, Average and Peak values – Phasor representation- Power factor- Single phase RC, RL and RLC circuits - Series and Parallel resonance - Simple problems.

UNIT- III SEMICONDUCTOR DIODE AND APPLICATIONS

10

N and P type semiconductors – PN junction – Biasing – VI characteristics – Diode operation- Rectifiers – Half wave, Full wave, Bridge rectifiers – Power supply filters - Zener diode- Applications - Optical diode

UNIT- IV TRANSISTORS AND APPLICATIONS

9

Transistors - Operation, Characteristics, Biasing – BJT amplifiers – CE – CB – CC – Multistage amplifiers – JFET, MOSFET - Characteristics, Biasing – SCR - Photo transistor.

UNIT- V OSCILLATORS AND OPERATIONAL AMPLIFIERS

8

Principle of oscillators – RC feedback Circuits – LC feedback circuits – Relaxation oscillators –Introduction to Operational Amplifiers – Input modes and Opamp parameters – Opamp with negative feedback – Comparator – Summing amplifier - Integrator and Differentiator.

L: 45, T: 15 Total : 60

TEXT BOOKS

1. R.Muthusubramanian, S.Salivahanan and K.A.Muraleedharan, Basic Electrical Electronics and Computer Engineering, McGraw Hill Publishing Co.Ltd, 1996. (Ch-1, 4, 5)
2. Thomas L. Floyd, Electronic Devices, 6th Edition, Pearson Education, 2001. (Ch- 1-7, 11-13, 16)

REFERENCES

1. Edminister & Nahvi, Electronic Circuits, Schaum's outlines, Tata McGraw-Hill, 1999
2. Robert L.Boylested and Louis Nahelsky, Electronic Devices & Circuit Theory, 7th Edition, Prentice Hall,1999.

CSE102 DATA STRUCTURES

L	T	P	C
3	1	0	4

AIM

To provide an in-depth knowledge in problem solving techniques and data structures.

OBJECTIVES

- To learn the systematic way of solving problems
- To understand the different methods of organizing large amounts of data
- To efficiently implement the different data structures
- To efficiently implement solutions for specific problems

UNIT - I PROBLEM SOLVING

Problem solving – Top-down Design – Implementation –Efficiency – Analysis – Sample algorithms.

UNIT – II LISTS

Array ADT – List ADT – Single, Double, Circular Lists –List applications – Polynomial Operations, Josephus Problem.

UNIT – III STACKS AND QUEUES

Stack ADT - Stack Applications - Queue ADT – Double Ended Queue – Circular Queue.

UNIT - IV TREES

Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Priority Queues (Heaps) – Model – Simple implementations – Binary Heap

UNIT -V SORTING & SEARCHING

Bubble sort – Insertion Sort – Selection sort - Shellsort – Heapsort – Mergesort – Quicksort – External Sorting – Linear search- Binary Search.

L: 45, T: 15 Total :60

TEXT BOOKS

1. R. G. Dromey, “How to Solve it by Computer” (Chaps 1-2), Prentice-Hall of India, 2002.
2. M. A. Weiss, “Data Structures and Algorithm Analysis in C”, 2nd ed, Pearson Education Asia, 2002. (chaps 3, 4.1-4.4 (except 4.3.6), 5.1-5.4.1, 6.1-6.3.3, 7.1-7.7 (except 7.2.2, 7.4.1, 7.5.1, 7.6.1, 7.7.5, 7.7.6), 7.11.

REFERENCES

1. Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, “Data Structures using C and C++”, 2nd ed, Prentice-Hall of India, 2000.
2. Richard F. Gilberg, Behrouz A. Forouzan, “ Data Structures – A Pseudocode Approach with C”, Thomson Brooks / COLE, 1998.
3. Aho, J. E. Hopcroft and J. D. Ullman, “Data Structures and Algorithms”, Addison-Wesley Publishing Company, 1983.

CSE103 OBJECT ORIENTED PROGRAMMING & C++

L	T	P	C
3	0	0	3

AIM

To present the concept of object oriented programming and discuss the important elements of C++.

OBJECTIVES

Since C++ plays a dominant role in software development, it is felt that the following objectives can be achieved after studying this subject.

- Understand the concepts of Object Oriented Programming.
- Write simple applications using C++.

UNIT I

7

Features of procedure oriented programming – Object oriented programming paradigm – Basic concepts of object oriented programming – Benefits of OOP – Object oriented languages – Applications of OOP – What is C++? – A simple C++ program – Structure of C++ program – Creating the source file.

UNIT II

10

Tokens, expressions and control structures – Functions in C++ – Library functions – Main function – Function prototyping – Call by reference – Return by reference – Default arguments – Constant arguments – Inline function – Function overloading.

UNIT III

10

Objects and classes – Constructors – Destructors – Objects as function arguments – Copy constructor – Returning objects from function – Structures and classes – Static class data – Arrays and strings – Array fundamentals, passing array as function argument – Array as class member data – Array of objects – C Strings – C++ String class.

UNIT IV

10

Operator overloading – Unary operator, binary operator – Data conversion – Inheritance – Derived class and base class constructor – Overloading member function – Class hierarchies – Public and Private Inheritance – Multiple inheritance.

UNIT V

8

Memory management – Virtual functions – Friend functions – Static functions – Assignment & copy initialization – 'this' pointer.

Total : 45

TEXT BOOKS

1. E. Balagurusamy, "Object Oriented Programming with C++", TMH, 2003. (Unit 1 & II)
2. Robert Lafore, "Object Oriented Programming in C++", Galgotia publications pvt Ltd, Third edition, 2000 (Unit III – V) 2009.

REFERENCES

1. K.R. Venugopal, Rajkumar, T. Ravishankar, “Mastering C++” Tata Mc Graw Hill Publishing Company Ltd, 1999.
2. Herbert Schildt, “ C + + : The Complete Reference”, Fourth Edition, Tata McGraw Hill Publishing Company Ltd, 2003.

APPROVED

EEE431 ELECTRONIC DEVICES AND CIRCUITS LABORATORY

L	T	P	C
0	0	3	1

AIM

To make students familiar with characteristics of various solid state electronic devices. To study the behavior of simple electronic circuits involving discrete components and ICs.

OBJECTIVES

- To obtain and study the characteristics of diodes, transistors and other semiconductor devices.
- To obtain the performance parameters of simple electronic circuits involving discrete components.
- To study the application of operational amplifiers.

LIST OF EXPERIMENTS:

1. Verification of Kirchoff's current law
2. Verification of Kirchoff's voltage law
3. PN junction diode characteristics
4. Half wave and Full wave rectifier
5. Zener diode regulator
6. CE transistor characteristics
7. JFET characteristics
8. Phase-shift oscillator
9. Wien-bridge oscillator
10. Comparator, Summing amplifier using Opamp

Total : 45

CSE 402 DATA STRUCTURES LABORATORY

L	T	P	C
0	0	3	1

Implementation of Stack using Arrays.

1. Implementation of Queue using Arrays.
2. Implementation of Linear Linked List.
3. Implementation of Linked Stack.
4. Implementation of Linked Queue.
5. Implementation of “Balancing Parenthesis “using Linked Stack.
6. Evaluation of Postfix Expression using Stack.
7. Implementation of Binary Search Tree.
8. Implementation of Quick Sort Algorithm.
9. Implementation of Heap Sort Algorithm.

Total : 45

APPROVED

CSE403 OBJECT ORIENTED PROGRAMMING LABORATORY

L	T	P	C
0	0	3	1

1. Programs Using Functions
 - Functions with default arguments
 - Implementation of Call by Value, Call by Address and Call by Reference
2. Simple Classes for understanding objects, member functions and Constructors
 - Classes with primitive data members
 - Classes with arrays as data members
 - Classes with pointers as data members - String Class
 - Classes with constant data members
 - Classes with static member functions
3. Compile time Polymorphism
 - Operator Overloading including Unary and Binary Operators.
 - Function Overloading
4. Runtime Polymorphism
 - Inheritance
 - Virtual functions
 - Virtual Base Classes
 - Templates

Total : 45

GHE102 PERSONAL VALUES - II

L	T	P	C
0	0	2	1

UNIT – I

5

Understanding Self – Who am I? – self realisation - our different self – Kaya Kalpam – Theory & practice – physical exercises – Completion – Meditation III stage (Thuria Initiations)

UNIT – II

5

Harmony between body, mind & soul – physical well being – Exercises practical benefits - Benefits of meditations – benefits of Kaya Kalpa – Applying the practices in Life –

UNIT – III

5

Personal values – Identifications – Adaptations – Implementations – practices & Benefits – Exercises, Meditation and Kaya Kalpa practices – perceptions.

Total : 15

KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE-6
(An Autonomous Institution Affiliated to Anna University, Coimbatore)

CBCS CURRICULUM 2009

B.E. COMPUTER SCIENCE & ENGINEERING

SEMESTER III

Code No.	Course Title	L	T	P	C
THEORY					
MAT105	Transform Methods in Engineering	3	1	0	4
CSE104	Design and Analysis of Algorithms	3	0	0	3
CSE105	Computer Architecture	3	1	0	4
CSE106	System Software	3	0	0	3
ECE103	Digital Electronics	3	0	0	3
CHY107	Environmental Science and Engineering	3	0	0	3
PRACTICAL					
CSE404	Algorithms Laboratory	0	0	3	1
ITY401	Digital Laboratory	0	0	3	1
CSE405	System Software Laboratory	0	0	3	1
GHE103	Human Excellence: Family Values	0	0	2	1

Total Periods: 31

Total credits: 24

SEMESTER IV

Code No.	Course Title	L	T	P	C
THEORY					
MAT106	Probability and Applied Statistics	3	1	0	4
CSE107	Object Oriented Analysis and Design	3	1	0	4
ITY102	Microprocessors	3	1	0	4
ITY103	Database Management Systems	3	0	0	3
	Technical Arts Elective	3	0	0	3
	Elective - I	3	0	0	3
PRACTICAL					
ITY402	Microprocessors Laboratory	0	0	3	1
ITY403	Database Management Systems Laboratory	0	0	3	1
	Elective – I Laboratory	0	0	3	1
GHE104	Human Excellence: Professional Values	0	0	2	1

Total Periods: 32

Total credits: 25

Code No.	Course Title	L	T	P	C
Technical Arts Electives					
GSS101	Professional Ethics	3	0	0	3
GSS105	Intellectual Property Rights	3	0	0	3
GSS109	Indian Economy	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective – I					
CSE108	Design of Visual Interfaces	3	0	0	3
CSE109	Computer Graphics	3	0	0	3
CSE110	Artificial Intelligence	3	0	0	3

Code No.	Course Title	L	T	P	C
Elective – I Lab					
CSE406	Visual Programming Laboratory	0	0	3	1
CSE407	Computer Graphics Laboratory	0	0	3	1
CSE408	Artificial Intelligence Laboratory	0	0	3	1

MAT105 TRANSFORM METHODS IN ENGINEERING 3 1 0 4
(Common to III Semester CSE & IT)

UNIT I FOURIER SERIES 9

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Parseval's identity – Harmonic Analysis.

UNIT II LAPLACE TRANSFORM 9

Laplace Transform – Sufficient conditions – Basic properties – Transforms of unit step function and unit impulse function - Derivatives and integrals of Laplace transform - Transform of periodic functions- initial and final value theorems.

UNIT III INVERSE LAPLACE TRANSFORM 9

Inverse Laplace transforms - Convolution theorem – Solution of linear ordinary differential equations of second order with constant coefficients, simultaneous equations of first order ODE and integral equations using Laplace transform.

UNIT IV FOURIER TRANSFORM 9

Infinite Fourier transform pair – Infinite Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval's identity- Fast Fourier Transform (Definition only).

UNIT V Z –TRANSFORM 9

Z-transform - Elementary properties – Convolution theorem - Inverse Z – transform (by using partial fractions, residue methods and convolution theorem) — Solution of difference equations using Z - transform.

L: 45 T: 15 Total: 60

TEXT BOOK:

1. Veerarajan T. "Engineering Mathematics" (for semester III), Third Edition, Tata McGraw Hill, New Delhi (2007)

REFERENCES:

1. Grewal, B.S., "Higher Engineering Mathematics", Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.
2. Kandasamy, P., Thilagavathy, K., and Gunavathy, K., "Engineering Mathematics Volume III", S. Chand & Company Ltd., New Delhi, 1996.
3. Arunachalam T., "Engineering Mathematics III", Sri Vignesh Publications, Coimbatore (Revised) 2009.

OBJECTIVES:

- To introduce basic concepts of Algorithms.
- To introduce mathematical aspects and Analysis of Algorithms.
- To introduce various algorithm design methods.

UNIT I**8**

Notion of Algorithm - Fundamentals of Algorithmic Problem Solving - Important Problem Types – Fundamental Data Structures - Fundamentals of the Analysis of Algorithm Efficiency: Analysis Framework - Asymptotic Notations and Basic Efficiency Classes.

UNIT II**8**

Mathematical Analysis of Non-recursive Algorithms - Mathematical Analysis of Recursive Algorithms - Example: Fibonacci Numbers - Empirical Analysis of Algorithms - Algorithm Visualization.

UNIT III**10**

Brute Force Method: Selection Sort and Bubble Sort - Sequential Search and Brute-Force string matching.

Divide and Conquer Method: Merge Sort - Quick Sort - Binary Search - Binary Tree Traversals and Related Properties.

Decrease and Conquer Method: Insertion Sort - Depth First Search and Breadth First Search.

UNIT IV**10**

Transform and Conquer Method: Presorting - Balanced Search Trees: AVL Trees - Heaps and Heap Sort.

Dynamic Programming: Warshall's and Floyd's Algorithm - Optimal Binary Search Trees.

Greedy Technique: Prim's Algorithm - Kruskal's Algorithm - Dijkstra's Algorithm - Huffman Trees.

UNIT V**9**

Backtracking: N-Queen's Problem - Hamiltonian Circuit Problem - Subset-Sum Problem. Branch and Bound: Assignment Problem - Knapsack Problem - Traveling Salesman Problem.

Total : 45**TEXT BOOK:**

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education Asia, 2003.

REFERENCES:

1. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, “Introduction to Algorithms”, PHI Pvt. Ltd., 2001
2. Sara Baase and Allen Van Gelder, “Computer Algorithms - Introduction to Design and Analysis”, Pearson Education Asia, 2003.
3. A.V.Aho, J.E. Hopcroft and J.D.Ullman, “The Design and Analysis of Computer Algorithms”, Pearson Education Asia, 2003.

OBJECTIVES:

- To have a thorough understanding of the basic structure and operation of a digital computer.
- To discuss the operation of arithmetic unit including fixed-point and floating-point operations.
- To study different types of control units and the concept of pipelining.
- To study the hierarchical memory system including cache memories and virtual memory.
- To study the different ways of communicating with I/O devices and standard I/O interfaces.

UNIT I BASIC STRUCTURE OF COMPUTERS 7

Functional Units - Basic Operational Concepts - Bus Structures - Software Performance - Memory Locations and Addresses - Memory Operations - Instruction and Instruction Sequencing - Addressing Modes - Assembly Language - Basic I/O Operations - Stacks and Queues.

UNIT II ARITHMETIC UNIT 9

Addition and Subtraction of Signed Numbers - Design of Fast Adders - Multiplication of Positive Numbers - Signed Operand Multiplication and Fast Multiplication - Integer Division - Floating Point Numbers and Operations.

UNIT III BASIC PROCESSING UNIT 11

Fundamental Concepts - Execution of a Complete Instruction - Multiple Bus Organization - Hardwired Control - Microprogrammed Control - Pipelining - Basic Concepts - Data Hazards - Instruction Hazards - Influence on Instruction Sets - Data Path and Control Consideration - Superscalar Operation.

UNIT IV MEMORY SYSTEM 9

Basic Concepts - Semiconductor RAMS - ROMS - Speed - Size and Cost - Cache Memories - Performance Consideration - Virtual Memory- Memory Management Requirements - Secondary Storage.

UNIT V I/O ORGANIZATION 9

Accessing I/O Devices - Interrupts - Direct Memory Access - Buses - Interface Circuits - Standard I/O Interfaces (PCI, SCSI, USB).

L : 45 T :15 Total : 60**TEXT BOOK:**

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, 5th Edition McGraw-Hill, 2002.

REFERENCES:

1. William Stallings, “Computer Organization and Architecture - Designing for Performance”, 6th Edition, Pearson Education, 2003.
2. David A.Patterson and John L.Hennessy, “Computer Organization and Design: The hardware / software interface”, 2nd Edition, Morgan Kaufmann, 2002.
3. John P.Hayes, “Computer Architecture and Organization”, 3rd Edition, McGraw Hill, 1998.

OBJECTIVES:

- To understand the relationship between System software and Machine Architecture.
- To know the design of assemblers, loaders and linkers.
- To have an understanding of Macro Processor and System Software Tools.

UNIT I INTRODUCTION 6

Introduction to system software and machine architecture - Simplified Instructional Computer (SIC) - SIC/XE –SIC programming examples-VAX Architecture – Ultra SPARC Architecture.

UNIT II ASSEMBLERS 11

Basic assembler functions – Machine dependent and independent assembler features – Assembler design options – Implementation example – MASM assembler.

UNIT III LOADERS AND LINKERS 10

Basic loader functions – Machine dependent and independent loader features – Loader design options – Implementation example– MS-DOS linker.

UNIT IV MACRO PROCESSOR 9

Basic macro processor functions – Machine independent macro processor features – Macro processor design options – Implementation examples –MASM macro processor, ANSI C language

UNIT V OTHER SYSTEM SOFTWARE 9

Language processors – Structure of a compiler - Text Editors – Interactive Debugging system.

Total: 45**TEXT BOOKS:**

1. Leland L. Beck , D. Manjula, “System Software- An Introduction to Systems Programming”, Third Edition, Pearson Publication, 2009.
2. Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, “Compilers- Principles, Techniques and tools”, Second edition, Pearson Education Inc, 2008 (Sections 1.1 & 1.2 of chapter 1)

REFERENCES:

1. D.M. Dhamdhare, “System Programming and Operating Systems”, Tata McGraw Hill Company, 1997.

OBJECTIVE:

- To introduce the basic concept of Hardware Components
- To introduce the basics of circuit design with fundamental hardware components

UNIT - I NUMBER SYSTEM AND BASIC LOGIC**10**

Number systems-Binary, Octal, Hexadecimal, Number base conversions , Binary codes: Weighted codes-BCD - 8421-2421, Non Weighted codes - Gray code - Excess 3 code Binary arithmetic, 1's complements , 2's complements, and Code conversions. Boolean algebra, Boolean postulates and laws –De-Morgan's Theorem- Principle of Duality – AND, OR, NOT, NAND & NOR operation, Minterm- Maxterm- Canonical forms - Conversion between canonical forms, sum of product and product of sum forms. Karnaugh map Minimization – Don't care conditions, Tabulation method.

UNIT - II COMBINATIONAL CIRCUITS**9**

Problem formulation and design of combinational circuits, adder , subtractor, Serial adder/ Subtractor - Parallel adder/ Subtractor- Carry look ahead adder- BCD adder- Magnitude Comparator , parity checker , Encoder , decoder, Multiplexer/ Demultiplexer , code converters, Function realization using gates and multiplexers.

UNIT - III SEQUENTIAL CIRCUIT**9**

Flip flops SR, JK, T, D and Master slave – Characteristic table and equation –Application table – Edge triggering –Level Triggering –Realization of one flip flop using other flip flops –Synchronous Binary counters –Modulo-n counter- Decade - BCD counters.

UNIT - IV DESIGN OF SEQUENTIAL CIRCUITS**9**

Classification of sequential circuits – Moore and Mealy - Design of Asynchronous counters- state diagram- State table –State minimization –State assignment- Register – shift registers - Universal shift register –Ring counters. Hazards: Static - Dynamic.

UNIT - V DIGITAL LOGIC FAMILIES AND PLD**8**

Memories – ROM, PROM, EEPROM, RAM.– Programmable Logic Devices: Programmable Logic Array (PLA)- Programmable Array Logic (PAL)- Implementation of combinational logic using PROM and PLA, Introduction to FPGA- Digital logic families :TTL,ECL,CMOS.

Total : 45**TEXT BOOKS:**

1. M. Morris Mano, Digital Design, 3rd Edition., Prentice Hall of India Pvt. Ltd., New Delhi, 2003/Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003
2. John .M Yarbrough, Digital Logic Applications and Design, Thomson- Vikas Publishing House, New Delhi, 2002.

REFERENCES:

1. S. Salivahanan and S. Arivazhagan, “Digital Circuits and Design”, Second Edition, Vikas Publishing House Pvt. Ltd, New Delhi, 2004
2. Charles H.Roth. “Fundamentals of Logic Design”, Thomson Publication Company, 2003.
3. Donald P.Leach and Albert Paul Malvino, “Digital Principles and Applications”, 5 Edition., Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.
4. R.P.Jain, “Modern Digital Electronics”, Third Edition., Tata McGraw–Hill publishing company limited, New Delhi, 2003.
5. Thomas L. Floyd, “Digital Fundamentals”, Pearson Education, Inc, New Delhi, 2003
6. Donald D.Givone, “Digital Principles and Design”, Tata Mc-Graw-Hill Publishing company limited, New Delhi, 2003.

OBJECTIVES:

At the end of this course the student is expected to understand what constitutes the environment, what are precious resources in the environment, how to conserve these resources, what is the role of a human being in maintaining a clean environment and useful environment for the future generations and how to maintain ecological balance and preserve bio-diversity.

1. INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES 10

Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

2. ECOSYSTEMS AND BIODIVERSITY 14

Concept of an ecosystem – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity – Biogeographical classification of India – Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, National and local levels – India as a mega-diversity nation – Hot-spots of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

3. ENVIRONMENTAL POLLUTION 8

Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – Soil waste Management: Causes, effects and control measures of urban and industrial wastes – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: floods, earthquake, cyclone and landslides.

4. SOCIAL ISSUES AND THE ENVIRONMENT

7

From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns, case studies – Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – Wasteland reclamation – Consumerism and waste products – Environment Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness

5. HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations – Population explosion – Family Welfare Programme – Environment and human health – Human Rights – Value Education – HIV / AIDS – Women and Child Welfare – Role of Information Technology in Environment and human health – Case studies.

Field Work

Visit to local area to document environmental assets- river / grassland / hill / mountain, visit to local polluted site- urban / rural / industrial / agricultural, study of common plants, insects, birds, study of simple ecosystems-pond, river, hill slopes etc.,

Total : 45

TEXT BOOKS:

1. Deswal.S and Deswal.A, “ A basic course in Environmental studies” Dhanpat Rai & Co, 2006.
2. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.
3. Miller T.G. Jr., Environmental Science – Sustaining the earth, Wadsworth Publishing Co., 1993

REFERENCES:

1. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad India., 2002
2. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media. 1996
3. Cunningham, W.P.Cooper, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.
4. Wager K.D., Environmental Management, W.B. Saunders Co., Philadelphia, USA, 1998.
5. Townsend C., Harper J and Michael Begon, “Essentials of Ecology”, Blackwell science Publishing Co., 2003
6. Trivedi R.K and P.K.Goel “Introduction to Air pollution” Techno-science Publications. 2003
7. Yamuna R.T “Environmental Science” Inder Publications, 2008

OBJECTIVES:

- To analyze the time complexity of programs.
- To develop programs using various algorithm design methods.

Write C++ programs for the following and analyze their time complexity:

1. Develop a recursive and non recursive program for calculating n^{th} Fibonacci number and compare their performance.
2. Develop a program to solve Towers of Hanoi problem using recursion.
3. Develop a program to implement Brute force string matching.
4. Implement Merge sort and Quick sort and compare their performance.
5. Implement DFS & BFS and compare their performance.
6. Develop a program to implement Josephus problem.
7. Develop a program to implement AVL trees.
8. Develop a program to find the shortest path using Floyd's algorithm
9. Develop a program to find minimum spanning tree using Prim's algorithm.
10. Develop a program to solve 8-Queens problem.

OBJECTIVE:

- To design and implement combinational and sequential logic circuits

LIST OF EXPERIMENTS

1. Verification of Boolean theorems using digital logic gates
2. Design and implementation of combinational circuits using basic gates for arbitrary functions, code converters, etc.
3. Design and implementation of 4-bit binary adder / subtractor using basic gates and MSI devices
4. Design and implementation of parity generator / checker using basic gates and MSI devices
5. Design and implementation of magnitude comparator
6. Design and implementation of application using multiplexers
7. Design and implementation of shift registers
8. Design and implementation of synchronous and asynchronous counters
9. Simulation study of a simple circuit using VHDL

OBJECTIVES:

- To design and create symbol table.
- To implement assemblers, Macro Processor, Loaders and Text Editor.

(Using C or C++)

1. Program to generate a symbol table for the given high level language program.
2. Program to implement pass one of a two pass assembler.
3. Program to implement pass two of a two pass assembler.
4. Program to implement a single pass assembler.
5. Program to implement a macro processor.
6. Program to implement an absolute loader.
7. Program to implement a relocating loader.
8. Program to implement pass one of a direct-linking loader.
9. Program to implement pass two of a direct-linking loader.

1. Family value-meaning –Introduction-values-Blessings for family peace-Restraint in family life- harmony in family-Interactive workshop.
2. Blissful married life-Greatness of good family relationship – Family life & Spiritual development.
3. Love and compassion –Greatness of womanhood –Food is medicine (healthy food habits)
4. Simple physical exercises.
5. Kayakalpa Yoga
6. Sun Rays Therapy
7. Padmasana.
8. Vajrasana.
9. Chakrasana & Viruchasana
10. Meditation

OBJECTIVES:

On completion of the course, the students are expected

- To know the use of measures of central tendency, dispersion and correlation for analysis of data.
- To understand the concepts of probability and random variables.
- To know about some standard distributions and their properties.
- To be able to test hypothesis using various tests for large and small samples.
- To analyze experiments based on one-way, two – way and Latin square classifications.
- To understand the basics of quality control using control charts.

UNIT I STATISTICAL MEASURES**9**

Measures of central tendency: Mean, Median and Mode – Measures of variation – Range, standard deviation, Mean deviation and coefficient of variation. Correlation and Regression: Karl Pearson's coefficient of correlation – Rank Correlation – Regression lines (Definitions and simple numerical problems only).

UNIT II PROBABILITY AND RANDOM VARIABLE**9**

Axioms of probability - Conditional probability - Total probability – Baye's theorem - Random variable – Distribution function – properties - Probability function - Probability density function – moments and moment generating function – properties.

UNIT III STANDARD DISTRIBUTIONS**9**

Binomial, Poisson and Normal distributions –properties- Fitting of Binomial, Poisson and normal distributions to data.

UNIT IV TESTING OF HYPOTHESIS**9**

Testing of hypothesis for large samples (single mean, difference of means, single proportion, difference of proportions) – Small samples tests based on t and F distributions (single mean, difference of means, paired t- test and variance ratio test) – Chi-square test for independence and goodness of fit - Simple numerical problems only.

UNIT V DESIGN OF EXPERIMENTS AND QUALITY CONTROL**9**

Analysis of variance – One way classification –Two – way classification – CRD - RBD - Latin square – LSD; Concept of process control - Control charts for variables – $\bar{X}$, R – charts – Control charts for attributes – p, np, c – charts – Tolerance limits.

L: 45 T: 15 Total: 60**TEXT BOOKS:**

1. Veerarajan T., "Probability and Statistics", Tata McGraw-Hill, New Delhi, 2007 and 2nd Reprint 2004.
2. Gupta S. P, "Statistical Methods", Sultan Chand and Sons Publishers, 2004. (Unit - I)

REFERENCES

1. Johnson R. A., “Miller and Freund’s Probability and Statistics for Engineers”, Sixth Edition, Pearson Education, Delhi, 2000.
2. Gupta S.C, and Kapur, J.N., “Fundamentals of Mathematical Statistics”, Sultan Chand, Ninth Edition, New Delhi, 1996.
3. Walpole R. E., Myers S.L. and Keying Ye, “Probability and Statistics for Engineers and Scientists”, Pearson Education Inc., 2002.
4. Arunachalam T., “Probability and Statistics”, Inder Publications, Coimbatore, 2008.

OBJECTIVES:

- To understand the object oriented life cycle
- To know how to identify objects, relationships, services, and attributes through UML
- To gain knowledge on UML modeling
- To know the object oriented Design process

UNIT I**8**

Introduction to Information System Development: System Analyst-Overview of System Analysis and Design – Business Systems Concepts – Categories of Information Systems – System Development Strategies – Implementation and Evaluation – Tools for Systems Development.

UNIT II**10**

An Overview of Object Oriented Systems Development - Object Basics – Object Oriented Systems Development Life Cycle - Introduction to Unified approaches - Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns – Frameworks – Unified Approach

UNIT III**10**

Unified Modeling Language – Use case Diagram - Class Diagram - Interactive Diagram – Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.

UNIT IV**8**

Identifying use cases - Object Analysis - Classification – Identifying Object relationships - Attributes and Methods.

UNIT V**9**

Design axioms - Designing Classes – Access Layer - Object Storage - Object Interoperability- Designing Interface Objects

L: 45 T:15**Total : 60****TEXT BOOKS:**

1. James A.Senn, “Analysis and Design of Information Systems”, Tata McGraw-Hill International editions, Second edition, 1989(Unit I)
2. Ali Bahrami, “Object Oriented Systems Development”, Tata McGraw-Hill, 1999 (Unit II, IV, V).
3. Martin Fowler, “UML Distilled”, Second Edition, PHI/Pearson Education, 2002. (UNIT III)

REFERENCES:

1. Grady Booch, “Object Oriented Analysis & Design with applications”, Pearson Education Asia, 2nd Edition, 2002.
2. James Rumbaugh, Ivar Jacobson, Grady Booch “The Unified Modeling Language Reference Manual”, Addison Wesley, 1999.
3. Igor Hawryszkiewicz, “Introduction to Systems Analysis and Design”, PHP, Fourth Edition, 2004

OBJECTIVES:

- To study the architecture and instruction set of 8085.
- To develop assembly language programs in 8085.
- To study the interrupt system of 8085 Microprocessor.
- To study different peripheral devices and their interfacing to 8085.
- To study the architecture of 8086 Microprocessor and Pentium Processor.

UNIT I THE 8085 MICROPROCESSOR 9

Introduction to 8085 - Microprocessor architecture and its operations –8085 MPU - Example of a 8085 based Microcomputer - Instruction set- Addressing modes- Timing diagram of 8085 (Opcode fetch, Memory Read/Write, I/O Read/Write).

UNIT II PROGRAMMING THE 8085 9

Programming the techniques –Counters – Time Delays – Stack and Subroutines – Code conversion – BCD Arithmetic - Interrupts- Memory mapped I/O and I/O mapped I/O for 8085.

UNIT III GENERAL PURPOSE INTERFACING DEVICES 9

8255A Programmable Peripheral Interface - IC 8251A Serial Communication Interface – 8253 Programmable Interval Timer IC - IC 8279 Programmable Keyboard /Display Interface – 8259A Programmable Interrupt Controller.

UNIT IV 8086 SOFTWARE ASPECTS 9

Intel 8086 microprocessor - Architecture - Instruction set - Addressing modes - Assembly language programming – Procedures.

UNIT V 8086 SYSTEM & PENTIUM PROCESSOR 9

Interrupts and interrupt service routines- Basic 8086/8088 Configurations: Minimum Mode and Maximum Mode - 8086/8088 based Multiprocessing Systems: Coprocessor Configurations, Closely Coupled Configurations and Loosely Coupled Configuration. Architecture of Pentium processor.

L : 45 T :15 Total : 60

TEXT BOOKS:

1. Ramesh S.Gaonkar, “Microprocessor - Architecture, Programming and Applications with the 8085”, Penram International Publishing Private Limited, Fifth Edition, 2008. (Unit I , II & III)
2. Yu-cheng Liu, Glenn A.Gibson, “Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design”, PHI Second Edition, 2004.(Unit IV & V)

REFERENCES:

1. Douglas V.Hall, “Microprocessors and Interfacing: Programming and Hardware”, TMH, Third edition, 1999
2. Barry B.Brey, “The Intel Microprocessors 8086/8088, 80186, 286, 386, 486, Pentium and Pentium Pro processor”, Prentice Hall of India Pvt. Ltd., 1998.

OBJECTIVES:

- To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- To make a study of SQL and relational database design.
- To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- To have an introductory knowledge about the emerging trends in the area of distributed DB and OODB.

UNIT I INTRODUCTION AND CONCEPTUAL MODELING 8

Database System Applications – Purpose of Database Systems – View of Data – Database Languages – Data Storage and Querying – Transaction Management – Database Architecture – Database Users and Administration – Data Models – Network Model – ER Model – Relational Model.

UNIT II RELATIONAL MODEL 9

Structure of Relational Databases – Relation Algebra and Calculus – SQL – Data Definition – Basic Structure of SQL Queries – Set Operations – Aggregate Functions – Nested Subqueries – Views – Modification of the Database – Integrity Constraints – Authorization – Embedded SQL and Dynamic SQL – Relational Database Design (upto BCNF)

UNIT III DATA STORAGE AND QUERYING 9

Storage and File Structure – Indexing and Hashing – Ordered indices – B⁺-tree index files – B- tree index files – Multiple Key Access- Static and Dynamic Hashing – Comparison of Ordered Indexing and Hashing – Query Processing.

UNIT IV TRANSACTION MANAGEMENT 10

Transaction -Concepts –States – Implementation of Atomicity, Durability and Isolation – Concurrent Executions – Serializability – Recoverability– Testing for Serializability – Concurrency Control – Lock Based Protocols – Timestamp-Based Protocols – Deadlock Handling – Recovery System – Failure Classification – Storage Structure – Recovery and Atomicity – Log-Based Recovery – Shadow Paging.

UNIT V OBJECT ORIENTED AND DISTRIBUTED DATABASES 9

Complex Data Types – Structured Types and Inheritance in SQL – Table Inheritance – Array and Multiset Types in SQL – Object-Identify and Reference Types in SQL – Implementing O-R Features – Persistent Programming Languages – Object Oriented versus Object Relational – Distributed Databases – Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols.

Total: 45

TEXT BOOK:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan - “Database System Concepts”, Fifth Edition, McGraw-Hill, 2006.

REFERENCES:

1. Ramez Elmasri and Shamkant B. Navathe, “Fundamentals of Database Systems”, Fourth edition, Pearson Education, 2004.
2. Raghu Ramakrishnan, “Database Management System”, Tata McGraw-Hill Publishing Company, 2003.

OBJECTIVES

- To understand instruction set of 8085
- To develop assembly language programs in 8085 and 8086
- To develop programs using interfacing devices with 8085.

LIST OF EXPERIMENTS**Programming with 8085**

1. Multiplication/division using repeated addition/subtraction.
2. Sum of N elements.
3. Arranging the set of numbers in ascending order.
4. Code conversion - Binary to Hexadecimal and Hexadecimal to Binary.
5. Interfacing 8255.
6. Interfacing 8253.
7. Interfacing 8279.

Programming with 8086

8. String concatenation.
9. Find and replace operation in a string.
10. Using BIOS/DOS calls: Keyboard control and display.

ITY403 DATABASE MANAGEMENT SYSTEMS LABORATORY 0 0 3 1
(Common to IV Semester CSE & IT)

OBJECTIVES:

- To practice SQL commands
- To practice cursors, triggers, procedures and functions in PL/SQL
- To implement systems like banking, payroll processing and library Management

LIST OF EXPERIMENTS

1. Data Definition Language (DDL) commands in RDBMS.
2. Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS.
3. High-level language extension with Cursors.
4. High level language extension with Triggers
5. Procedures and Functions.
6. Embedded SQL.
7. Database design using ER model and Normalization.
8. Design and implementation of Payroll Processing System.
9. Design and implementation of Banking System.
10. Design and implementation of Library Information System.

(Common to IV Semester all Branches)

1. Personality –Concepts, definitions -5 C's and 5 E's – Self development – Leadership Traits –IQ,EQ,SQ.
2. Time management-Practice –Cause and Effect –Professional Ethics –Values.
3. Quality Enhancement – Empowerment of mind – Passion for Excellence –Auto suggestions – Self control.
4. Simplified physical exercises.
5. Yoga Mudra.
6. Pachi Motasana.
7. Ustrasana.
8. Vakkarasana.
9. Salapasana.
10. Meditation

OBJECTIVES

- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of Others

UNIT - I HUMAN VALUES 10

Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality, Religious tolerance.

UNIT - II ENGINEERING ETHICS AND THEORIES 9

Definition, Moral issues, Types of inquiry, Morality and issues of morality, Kohlberg and Gilligan's theories, consensus and controversy, Professional and professionalism, moral reasoning and ethical theories, virtues, professional responsibility, integrity, self respect, duty ethics, ethical rights, self interest, egos, moral obligations etc.

UNIT – III SOCIAL ETHICS AND ENGINEERING AS SOCIAL EXPERIMENTATION 9

Engineering as social experimentation, codes of ethics, Legal aspects of social ethics, the challenger case study, Engineers duty to society and environment, Gandhian Principles of corporate trusteeship.

UNIT – IV SAFETY, RESPONSIBILITIES AND RIGHTS OF ENGINEERS 9

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies. Bhopal gas tragedy - Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

UNIT – V GLOBAL ISSUES AND ENGINEERS AS MANAGERS, CONSULTANTS AND LEADERS 8

Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors - moral leadership - Engineers as trend setters for global values, IT Industry (cultural aggression).

Total: 45**TEXT BOOKS:**

1. Mike Martin and Roland Schinzinger, “Ethics in Engineering”, (2005) McGraw-Hill, New York.
2. John R. Boatright, “Ethics and the Conduct of Business”, (2003) Pearson Education, New Delhi.

REFERENCES:

1. Charles D. Fleddermann, “Engineering Ethics”, 2004 (Indian Reprint) Pearson Education / Prentice Hall, New Jersey,
2. Charles E. Harris, Michael S. Protchard and Michael J Rabins, “Engineering Ethics – Concepts and Cases”, 2000 (Indian Reprint now available) Wadsworth Thompson Learning, United States.

UNIT - I CONCEPTS OF INTELLECTUAL PROPERTY RIGHTS 5

Introduction – Invention and Creativity – Intellectual Property (IP) – Importance – Protection of IPR – Basic types of property, Movable Property, Immovable Property and Intellectual Property).

UNIT - II PATENTS 10

IP – Patents – Copyrights and related rights – Trade Marks and rights arising from Trademark registration – Definitions – Industrial Designs and Integrated circuits – Protection of Geographical Indications at national and International levels – Application Procedures.

UNIT - III INTERNATIONAL SCENARIO 10

International convention relating to Intellectual Property – Establishment of World Intellectual Property Organization (WIPO) – Mission and Activities – History – General Agreement on Trade and Tariff (GATT).

UNIT - IV WORLD TRADE ORGANIZATION (WTO) 10

Indian Position Vs WTO and Strategies – Indian IPR legislations – commitments to WTO-Patent Ordinance and the Bill – Draft of a national Intellectual Property Policy – Present against unfair competition.

UNIT - V COPYRIGHTS 10

Case Studies on – Patents (Basmati rice, turmeric, Neem, etc.) – Copyright and related rights – Trade Marks – Industrial design and Integrated circuits – Geographic indications – Protection against unfair competition.

Total : 45

TEXT BOOK:

1. R.Radhakrishnan & S.Balasubramanian, “Intellectual Property Rights”(2008), Excel Publishers.
2. Subbaram N.R. “ Handbook of Indian Patent Law and Practice “ (1998), S. Viswanathan (Printers and Publishers) Pvt. Ltd..

REFERENCES:

1. Eli Whitney, United States Patent Number : 72X, Cotton Gin, March 14, 1794.
2. Intellectual Property Today : Volume 8, No. 5, May 2001, [www.iptoday.com].
3. Using the Internet for non-patent prior art searches, Derwent IP Matters, July 2000. [www.ipmatters.net/features/000707_gibbs.html.

UNIT -I**9**

Basics of economics – Factors of production – concepts of economic growth and society equity. Ancient Indian Economic model- Family and savings- joint family system – self employment and non corporate entities- role of ruler in economic administration.

UNIT -II**9**

Agrarian base- Industry, Trade and services- inland and overseas – Indian Economy under British rule-Agriculture, Industry and trade- Development of infrastructure- Transport and modern education.

UNIT -III**9**

Post - independent Indian Economic model- Growth agencies – Indian economic planning models – Role of planning commission – Dominance of public sector- Role of private sector- Economic Liberalization.

UNIT-IV**9**

Indian Trade and Business models- Family orientation – Indian business communities- Sources of fund for business – business relationship – role of rules in business – Entry of British business in India and their model.

UNIT – V**9**

Current Economic issues – Problems of Agricultural sector – Dominance of MNCs – Govt. institutions for economic regulation - Public Distribution – Public Administration - Ecological imbalance.

Total :45**TEXT BOOKS:**

1. Kanagasapathi,P (2008) Indian Models of Economy, Business and Management, Prentice Hall of India, New Delhi, ISBN 978-81-203-3423-6
2. Ray,S.K (2008) Indian Economy, Prentice Hall of India, New Delhi, ISBN 978-81-203-3137-2

OBJECTIVES:

- To learn about various interface design processes and its importance and selection of suitable choices in various environments
- Analyzing and designing new interfaces..

UNIT I**8**

Introduction-Importance-Human-Computer interface-characteristics of graphics interface-Direct manipulation graphical system - web user interface-popularity-characteristic & principles.

UNIT II**10**

User interface design process- obstacles-usability-human characteristics in design - Human interaction speed-business functions-requirement analysis-Direct-Indirect methods-basic business functions-Design standards-system timings - Human consideration in screen design - structures of menus - functions of menus-contents of menu-formatting -phrasing the menu - selecting menu choice-navigating menus-graphical menus.

UNIT III**9**

Windows: Characteristics-components-presentation styles-types-managements-organizations-operations-web systems-device-based controls: characteristics-Screen - based controls: operate control - text boxes-selection control-combination control-custom control-presentation control.

UNIT IV**9**

Text for web pages - effective feedback-guidance & assistance-Internationalization-accessibility-Icons-Image-Multimedia -coloring.

UNIT V**9**

Windows layout-test: prototypes - kinds of tests - retest - Information search - visualization - Hypermedia - www - Software tools.

Total : 45**TEXT BOOK:**

1. Wilbert. O. Galitz ,“The Essential Guide to User Interface Design”, John Wiley& Sons, 2001.

REFERENCES:

1. Ben Sheiderman, “Designning the User Interface”, Pearson Education, 1998.
2. Alan Cooper, “The Essential of User Interface Design”, Wiley – Dream Tech Ltd., 2002.
3. Jenifer Tidwell, “Designing Interfaces” O Relly Publications.

OBJECTIVES:

- To study graphics techniques and algorithms.
- To study multimedia concepts and various I/O technologies.
- To enable the students to develop their creative thinking.

UNIT I**9**

Overview of Graphics Systems: Video Display devices – Raster Scan Systems – Random Display Systems – Hard Copy Devices.

Output Primitives: Points and Lines – Line drawing algorithms – Circle generating algorithms – Ellipse generating algorithms.

UNIT II**9**

Two-Dimensional Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Reflection and Shearing Transformations- Affine Transformations.

Two-Dimensional Viewing: The Viewing pipeline – Viewing Coordinate Reference Frame – Window to View port Coordinate Transformation – Two Dimensional Viewing Functions – Clipping Operations –Point Clipping – Line clipping – Polygon Clipping – Curve Clipping.

UNIT III**9**

Three-Dimensional Concepts: Three Dimensional Display Methods –Parallel Projection – Perspective Projection –Depth Cueing – Visible Line and Surface Identification – Surface Rendering – Exploded and Cutaway Views – Three Dimensional and Stereoscopic Views

Three-Dimensional Object representations: Polygon Surfaces – Curved lines and Surfaces – Quadric Surfaces – Blobby Objects – Spline representation – Bezier Curves and Surfaces.

UNIT IV**9**

Three Dimensional Geometric and Modeling Transformations: Translation – Rotation –Scaling – Reflection and Shearing Transformations – Composite transformations – Three dimensional Transformation Functions Modeling and Coordinate transformations.

Three dimensional Viewing: Viewing Pipeline – Viewing Coordinates – Projections – View volumes - General Projection transformations –Clipping.

UNIT V**9**

Colour Models and colour Applications: Properties of Light – Standard Primaries and Chromaticity Diagram – Intuitive Colour Concepts – RGB Colour Model – YIQ Colour Model – CMY Colour Model – HSV Colour Model – Conversion between HSV and RGB Models - HLS Colour Model – Colour selection and Applications.

Computer Animation: Design of Animation Sequences – General Computer Animation Functions – Raster Animations – Computer Animation Languages – Key Frame Systems – Motion Specifications.

Total : 45**TEXT BOOK:**

1. Donald Hearn M. Pauline Baker, “Computer Graphics - C Version”, 2nd Edition, Pearson Education, 2006.

OBJECTIVES:

- To learn about agent based approach to Artificial Intelligence.
- To learn about the applications of Artificial Intelligence.

UNIT I AGENTS AND SEARCHING TECHNIQUES 9

Introduction: Definition of AI. **Intelligent Agents:** Agents and environments - Good behavior – The nature of environments – structure of agents. **Problem solving agents:** Formulating problems – searching for solutions – Iterative deepening depth-first search. **Informed search and exploration :** Informed search strategies – heuristic functions – local search algorithms – local search in continuous spaces – online search agents and unknown environments

UNIT II SEARCHING TECHNIQUES AND LOGICAL AGENTS 9

Constraint satisfaction problems (CSP): Backtracking search and Local search for CSP – Structure of problems. **Adversarial Search:** Games – Optimal decisions in games – Alpha-Beta Pruning – imperfect, real-time decisions – games that include an element of chance. **Logical agents:** Knowledge-based agents – The Wumpus world- Logic – Propositional logic- reasoning patterns in Propositional logic - effective propositional inference – agents based on Propositional logic.

UNIT III KNOWLEDGE AND REASONING 9

First order logic : Representation revisited – Syntax and semantics for first order logic – Using first order logic – Knowledge engineering in first order logic. **Inference in First order logic :** propositional versus first order logic – unification and lifting – forward chaining – backward chaining – Resolution. **Knowledge representation:** Ontological Engineering - Categories and objects – Actions, situations and events - Mental events and mental objects.

UNIT IV PLANNING, REASONING AND LEARNING 9

Planning: The planning problem- planning with state-space search-partial order planning- graphs – planning with propositional logic. **Making simple decisions:** The basis of Utility theory – Utility and multiattribute utility functions – decision networks – The value of information – Decision theoretic expert systems. **Learning from observations :** Forms of learning - Inductive learning - Learning decision trees - Ensemble learning

UNIT V LEARNING AND COMMUNICATION 9

Knowledge in learning – Logical formulation of learning – Explanation based learning – Learning using relevant information – Inductive logic programming
Statistical learning methods: Neural networks **Reinforcement learning:** Passive reinforcement learning - Active reinforcement learning - Generalization in reinforcement learning.
Communication: Communication as action – Formal grammar for a fragment of English – Syntactic analysis – Augmented grammars – Semantic interpretation – Ambiguity and disambiguation – Discourse understanding – Grammar induction.

Total : 45

TEXT BOOKS:

1. Stuart Russell, Peter Norvig, “Artificial Intelligence – A Modern Approach”, 2nd Edition, Pearson Education / Prentice Hall of India, 2004.
2. Elaine Rich, Kevin Knight, Shivashankar.B.Nair, “Artificial Intelligence”, Tata Mc Graw Hill Publishing Company Limited. Third Edition, 2009. (For Unit III only)

REFERENCES:

1. Nils J. Nilsson, “Artificial Intelligence: A new Synthesis”, Harcourt Asia Pvt. Ltd., 2000.
2. George F. Luger, “Artificial Intelligence-Structures And Strategies For Complex Problem Solving”, Pearson Education / PHI, 2002.

OBJECTIVE:

- To learn and implement Graphical User interface components and their importance in various visual applications.
1. Design a user interface to perform simple calculator operations using basic tools like text box, button and label controls.
 2. Design a Single Document user interface to obtain personal detail of a person and store it in a database using components like form, text box, combo box, label, tab control, button, Radio buttons and frame.
 3. Design a Multi Document user interface for chat application.
 4. Design a web based user interface to display the examination marks of selected student using controls like frames, list view, label and buttons.
 5. Design a web based user interface for entering attendance of selected group (student group of employee group) using controls like frames, list view, label, Progress bar and buttons.
 6. Design a web based user interface for user login/registration of user and validate username and display the strength of password using controls like, text box, button and Ajax control extenders.
 7. Design a web based user interface to display the statistical or analysis report in graphical form using controls like frames, list view, label, Progress bar buttons and Ajax controls.

OBJECTIVES:

- To implement various algorithms to create basic graphics primitives.
 - To implement transformation techniques.
 - To implement compression algorithms.
 - Making use of high end software used in multimedia content creation.
-
1. To implement DDA algorithm using C/C++ language.
 2. To implement Bresenham's line drawing algorithm using C/C++ language.
 3. To implement Bresenham's Circle drawing algorithm using C/C++ language.
 4. To implement Bresenham's Ellipse drawing algorithm using C/C++ language.
 5. To perform 2D transformations using C/C++ language.
 - i) Translation
 - ii) Rotation
 - iii) Scaling
 6. To perform 2D transformations using C/C++ language.
 - i) Reflection
 - ii) Shearing
 7. To perform 3D transformations using C/C++ language.
 - i) Translation
 - ii) Rotation
 - iii) Scaling
 8. To implement Cohen-Sutherland line clipping algorithm using C/C++ language.
 9. To convert between colour models using C/C++ language.
 - i) RGB to YIQ Vice versa
 - ii) CMYK to RGB Vice versa
 10. Using Turbo C/C++ graphics library functions implement the following.
 - i) Walking man
 - ii) Packet calculator with GUI(Graphical User Interface)

OBJECTIVES:

- To perform experiments related to AI concepts and methodologies.
- To use PROLOG for AI problems.

I) Using C/C++, develop software necessary to perform the following experiments:

1. Hill climbing for the blocks-world problem.
2. A* search for the Traveling Salesman problem.
3. Solve the following cryptarithmic problem:

▪ CROSS+ ROADS= DANGER

4. Solve the following water jug problem:

Given a 4-gallon and a 3-gallon jug. Neither has any measuring marker on it. A pump is available to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug?

5. Develop a semantic net for the statement:

John is an athlete and he has a maximum speed of 40 km/hr.

II) Using PROLOG, develop programs for the following:

1. Application of predicate logic to prove facts and for question-answering.
2. Design an expert system for medical diagnosis.

Unit - I Automata**9L + 3 T hrs**

Finite Automata (FA) – Deterministic Finite Automata (DFA) – Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon Transitions.

Unit - II Regular Expressions and Languages**9L + 3 T hrs**

Regular Expression – FA and Regular Expressions – Proving Languages not to be Regular – Closure Properties of Regular Languages – Equivalence and Minimization of Automata.

Unit - III Context-Free Grammar and Languages**9L + 3 T hrs**

Context-Free Grammar (CFG) – Parse Trees – Ambiguity in Grammars and Languages – Definition of the Pushdown Automata – Languages of a Pushdown Automata – Equivalence of Pushdown Automata and CFG – Deterministic Pushdown Automata.

Unit - IV Properties of Context-Free Languages**9L + 3 T hrs**

Normal forms for CFG – Chomsky Normal Form (CNF) – Greibach Normal Form (GNF) – Pumping Lemma for CFL – Closure Properties of CFL – Turing Machine – Programming Techniques for TM.

Unit - V Undecidability**9L + 3T hrs**

A Language that is not Recursively Enumerable (RE) – An Undecidable Problem that is RE – Undecidable Problems about Turing Machines – Post's Correspondence Problem.

LECTURE: 45 Hrs TUTORIAL: 15 Hrs**TOTAL: 60 Hrs****TEXT BOOK**

1. J.E.Hopcroft, R.Motwani and J.D Ullman, "Introduction to Automata Theory, Languages and Computation", Pearson Education, Third edition, 2007.

REFERENCES

1. H.R.Lewis and C.H.Papadimitriou, "Elements of the Theory of Computation", Pearson Education / PHI, Second edition, 2003.
2. J.Martin, "Introduction to Languages and Theory of Computation", TMH, Third edition, 2003.
3. Micheal Sipser, "Introduction to Theory of Computation", Thomson Brokecole, 1997.

Unit - I**7 hrs**

Introduction: Operating System Structure – Operating System Operations – Process Management – Memory Management – Storage Management – Protection and Security – Distributed Systems – Computing Environments – System Structures: Operating System Services – User Operating System Interface – System Calls – Types of System Calls – System Programs – **Process Concept:** Process Scheduling – Operations on Processes – Inter-process Communication.

Unit - II**10 hrs**

Multithreaded Programming: Overview – Multithreading Models – Threading Issues – **Process Scheduling:** Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling – Synchronization – The Critical-Section Problem – Peterson’s Solution – Synchronization Hardware – Semaphores – Classic problems of Synchronization – Monitors.

Unit - III**10 hrs**

Deadlocks: System Model – Deadlock Characterization – Methods for Handling Deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Recovery from Deadlock – **Memory Management Strategies:** Swapping – Contiguous Memory Allocation – Paging – Structure of the Page Table – Segmentation.

Unit - IV**9 hrs**

Virtual Memory Management: Demand Paging – Copy on Write – Page Replacement – Allocation of Frames – Thrashing – **File System:** File Concept – Access Methods – Directory Structure – File Sharing – Protection.

Unit - V**9 hrs**

Implementing File Systems: File System Structure – File System Implementation – Directory Implementation – Allocation Methods – Free-space Management
Secondary Storage Structure: Disk Structure – Disk Scheduling – Disk Management – Swap-Space Management. **Case Study:** The Linux System.

TOTAL : 45 Hrs**TEXT BOOK**

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Principles”, John Wiley & Sons (Asia) Pvt. Ltd, Seventh Edition, 2006.

REFERENCES

1. Harvey M. Deitel, “Operating Systems”, Pearson Education Pvt. Ltd, Second Edition, 2002.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Prentice Hall of India Pvt. Ltd, 2003.
3. William Stallings, “Operating System”, Prentice Hall of India, Fourth edition, 2003.

Unit – I The Software Process**9 hrs**

The Nature of Software – Software Engineering as a Discipline – Software Process – Process Models – Waterfall Model – Evolutionary Process Models – Prototyping – Spiral Model – Unified Process – Agile Development – Agile Process – People Factors in Agile Development Teams – XP Process.

Unit – II Requirements Engineering**9 hrs**

Requirements Engineering – Elicitation and Problems Involved – Elaboration – Analysis Model Building – Negotiation – Requirements Analysis – Scenario Based Modeling – Use Cases – Class Based Modeling – Behavioral Modeling – State Diagrams - CRC Model – Data Modeling – Activity Diagrams – Data Flow Model.

Unit – III Software Design**9 hrs**

Design Concepts – Abstraction and Refinement – Architecture – Modularity – Functional Independence – Refactoring – Object Oriented Design – Design Model – Architectural Design using Data Flow – Component Level Design – Designing Class Based Components – Component Reuse – User Interface Design – Design Patterns – Frameworks.

Unit – IV Software Quality Management**9 hrs**

Software Quality Assurance – Tasks, Goals and Metrics – Reliability and Availability – SQA Plan – Verification and Validation - Testing Strategy – Unit Testing – Integration Testing – White Box Testing – Basis Path Testing – Control Structure Testing – Black Box Testing – Functional Testing – Equivalence Partitioning – Boundary Value Analysis – Performance Testing – Stress Testing – Regression Testing – Software Configuration Management.

Unit – V Software Project Management**9 hrs**

Software Teams – Agile Teams – Organizational Issues – Software Measurement – Size Oriented and Function Oriented Metrics – Object Oriented and Use Case Oriented Metrics – Measuring Quality – Project Estimation – Software Sizing – Estimation with Use Cases – COCOMO models – Software Equation – Project Scheduling – Time-line Charts – Risk Management – Software Maintenance – Reengineering.

TOTAL:45 Hrs**TEXT BOOK**

1. R.S. Pressman, 'Software Engineering – A Practitioner's Approach', Seventh edition, McGraw Hill International Edition, 2010.

REFERENCES

1. Stephen Schach, 'Software Engineering', Seventh edition, TMH, New Delhi, 2007.
2. Pankaj Jalote, 'An Integrated Approach to Software Engineering', Third edition, Narosa Publishing House, 2005.
3. M. Blaha and J. Rumbaugh, 'Object Oriented Modeling and Design with UML', Second edition, Prentice-Hall India, 2006.
4. I. Sommerville, 'Software Engineering', Seventh edition, Pearson Education, 2004.

Unit - I Data Communications**8 hrs**

Components – Direction of Data Flow – Network Components and Categories – Types of Connections – Topologies – Protocols and Standards – ISO / OSI model – TCP/IP Protocol Suite - Addressing – Transmission Media.

Unit - II Data Link Layer**12 hrs**

Error Detection and Correction – Parity – CRC – Hamming Code- Flow Control and Error Control – Stop and Wait – Go back –N ARQ – Selective Repeat ARQ – Sliding Window – LAN – Ethernet IEEE 802.3 – IEEE 802.4 – IEEE 802.5 – IEEE 802.11 Architecture – FDDI – Networking Devices.

Unit - III Network Layer**8 hrs**

Internetworks – Packet Switching and Datagram Approach – IP Addressing Methods – Subnetting – Routing – Distance Vector Routing – Link State Routing

Unit - IV Transport Layer**9 hrs**

Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) - Congestion Control – Quality of Services (QoS) – Integrated Services.

Unit – V Application Layer**8 hrs**

Domain Name Space (DNS) – SMTP – FTP – HTTP – WWW – Security – Cryptography.

TOTAL : 45 Hrs**TEXT BOOK**

1. Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, Fourth edition 2006.

REFERENCES

1. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
2. Larry L. Peterson and Peter S. Davie, “Computer Networks”, Harcourt Asia Pvt. Ltd., Third edition, 2003.
3. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth edition, 2003.
4. William Stallings, “Data and Computer Communication”, Pearson Education, Sixth edition, 2003.

Unit - I**7 hrs**

Internet Connection concepts – Online Chatting and Conferencing concepts - FTP concepts - Web site Creation concepts – HTML - Creating Web Pages using HTML Tags - Image Mapping

Unit - II**9 hrs**

Java Fundamentals – Control Structures – Classes – Methods - Garbage Collection - Inheritance

Unit - III**9 hrs**

Packages and Interfaces – Exception Handling - String Handling – java.lang.package: Primitive type Wrapper classes.

.

Unit - IV**10 hrs**

Multithreading: Thread model - Life Cycle – Synchronization - Inter-thread Communication – I/O Package: File class – Stream classes – Util package: Collection Interfaces – Collection classes

Unit - V**10 hrs**

Applet class – Event Handling: Event classes - Event Listener Interfaces - Adapter classes - AWT package: Windows, Graphics and Text – Layout Managers

TOTAL : 45 Hrs**TEXT BOOK**

1. Margaret Levine Young, “Internet, The Complete Reference”, Millennium Edition, Tata McGraw Hill, 2002 (Unit 1)
2. Herbert Schildt, “The Complete Reference – Java”, 7th Edition, Tata McGraw Hill, 2007 (Unit 2, 3, 4 & 5)

REFERENCES

1. Bruce Eckel, ”Thinking in Java”, 4th Edition, Tata McGraw Hill, 2001
2. Keyur shah, “Gateway to Java Programmer Sun Certification”, Tata McGraw Hill, 2002.
3. Deitel and Deitel, “Java How to Program”, Prentice Hall, 1999.

(Implement the following on Linux platform. Use C for high level language implementation)

1. Shell programming
 - Study of UNIX commands
 - Implementation of simple functions
2. Shell programming
 - Loops
 - Patterns
 - Expansions
 - Substitutions
3. Developing programs using the following system calls of UNIX operating system:
fork, exec, getpid, exit, wait, close, stat, opendir, readdir.
4. Simulation of ls and grep Unix commands.
5. Calculation of Average Turnaround Time & Average Waiting Time for the Non-preemptive Priority CPU Scheduling algorithm.
6. Calculation of Average Turnaround time & Average Waiting Time for the Round Robin CPU Scheduling algorithm.
7. Implementation of Banker's algorithm.
8. Implementation of First fit, Best fit & Worst fit Memory Allocation methods.
9. Implementation of Paging concept.
10. Implementation of First in First out & Least Recently Used page Replacement algorithms.
11. Implementation of FCFS and SSTF Disk Scheduling algorithms.

1. Design a Webpage using basic HTML tags and table tags
2. Design a Website using anchor, form, frame tags for an application
3. Simple Programs in java using classes and methods
4. Program for Method Overloading
5. Program for Method Overriding
6. Program using Multiple Packages and Interface Inheritance
7. Program using In-built methods of String class.
8. Program for Simple Thread Creation using Thread class, Runnable Interface
9. Program for Inter-thread Communication and Synchronization
10. Program using Input streams and Output streams
11. Program for Event Handling and Layouts in Applets for AWT controls (2 experiments)

OBJECTIVES:

- To equip students of engineering and technology with effective speaking and listening skills in English and
- To help them develop their soft skills and people skills, which will make the transition from College to workplace smoother and help them to excel in their jobs and to enhance students' performance at Placement Interviews, Group discussions and other recruitment exercises.

I English Language Lab**1. Listening Comprehension**

Listening – Listening and Sequencing of Sentences – Filling in the Blanks – Listening and Answering the Question

2. Reading Comprehension and Vocabulary

Filling in the Blanks – Cloze Exercises – Vocabulary Building – Reading and Answering Questions

3. Speaking

Intonation – Ear Training – Correct Pronunciation – Sound Recognition Exercises – Common Errors in English

4. Conversations

Face to Face Conversation – Telephone Conversation - Role Play Activities (Students take on roles and engage in conversation)

II Career Lab**1. Resume / Report Preparation / Letter Writing**

Structuring the Resume / Report – Letter Writing / E-mail Communication – Samples

2. Presentation Skills

Elements of an Effective Presentation – Structure of a Presentation –Presentation Tools – Voice Modulation – Audience Analysis – Body Language

3. Soft Skills

Time Management – Articulateness – Assertiveness – Innovation and Creativity – Stress Management & Poise

4. Group Discussion

Why is GD Part of the Selection Process? – Structure of a GD- Moderator-led and Other GDs – Strategies in GD – Team Work – Body Language –Mock GD

5. Interview Skills

Kinds of Interviews –Required Key Skills – Corporate Culture- Mock Interviews

REFERENCES

Books:

1. Meenakshi Raman and Sangeetha Sharma, “Technical Communication - Principles and Practice”, Oxford University Press, New Delhi, 2004.
2. Barker. A, “Improve your communication skills”, Kogan page India Pvt Ltd, New Delhi, 2006.
3. Adrian Doff and Christopher Jones, “Language in Use (Upper- Intermediate), Cambridge University Press, First South Asian Edition, 2004.
4. John Seely, “The Oxford Guide to writing and speaking”, Oxford University Press, New Delhi, 2004.

CDs:

1. “Train2sucess” series
 - 1.Telephone Skills.
 - 2.Interviewing Skills
 - 3.Negotiation Skillsby Zenith Global Consultants Ltd. Mumbai.
2. “Business English Communication” series.
3. “Look Ahead” by Cambridge University Press.

1. Evolution of Man – Man in Society.
2. Duties and Responsibilities, Duty to Self, Family, Society and the World.
3. Disparity among Human Beings.
4. Social welfare – Need for social welfare – Pure mind for pure society.
5. Politics and Society – Education and Society-Case Study and Live Examples.
6. Impact of Science in Society - Social Development & Society Upliftments by Science.
7. Economics & Society – Role of Economics in creating a Modern Society.
8. Central Message of Religions.
9. Yogasanas-I.
10. Meditation-II. [Thuriatheetham]

Unit - I Introduction 9 hrs

Decision making, Systems, Modeling, and support: Systems – Models – Modeling process

Decision making: The Intelligence Phase – The Design Phase - The Choice Phase – The Implementation Phase – Alternative Decision Making Models – The Decision Makers - Case Study on Clay Process Planning at IMERYS.

Unit - II Decision Support System Development 9 hrs

Decision Support System Development: Life cycle – Methodologies – Prototyping- Technology Levels and Tools – Development Platforms – Tool Selection – Developing DSS

Enterprise Decision Support Systems: Evolution of Information Systems – Information Needs – Characteristics and Capabilities – Comparing and Integrating EIS and DSS – EIS, Data Access, Data Warehousing, OLAP, Multidimensional Analysis, Presentation and the Web – Including Soft Information in Enterprise Systems - Organizational DSS – Supply and Value Chains and Decision Support – Supply Chain Problems and Solutions – Computerized Systems: MRP – ERP – SCM – Frontline Decision Support Systems.

Unit - III Knowledge Management 9 hrs

Organizational Learning and Memory – Knowledge Management – Development – Methods, Technologies and Tools – Success – Knowledge Management and Artificial Intelligence – Electronic Document Management.

Knowledge Acquisition and Validation: Knowledge Engineering – Scope – Acquisition Methods – Interviews – Tracking Methods – Observations and other Manual Methods – Grid Analysis – Machine Learning – Selection of an Appropriate Knowledge Acquisition Method – Multiple Experts – Validation and Verification of the Knowledge Base – Analysis, Coding, Documenting and Diagramming – Numeric and Documented Knowledge Acquisition – Knowledge Acquisition and the Internet/Intranets.

Knowledge representation: Representation in Logic and Other Schemas – Semantic Networks – Production Rules – Frames – Multiple Knowledge Representation – Experimental Knowledge Representations – Representing Uncertainty.

Unit - IV Inference Techniques and Intelligent Systems Development 9 hrs

Inference Techniques: Reasoning in Artificial Intelligence – Inference with Rules - The Inference Tree – Inferencing with Frames – Model-Based and Case-Based Reasoning - Explanation and Meta Knowledge – Inference with Uncertainty – Representing Uncertainty – Probabilities and Related Approaches – Theory of Certainty – Approximate Reasoning using Fuzzy Logic.

Intelligent Systems Development: Prototyping- Project Initialization – System Analysis and Design – Software Classification- Building Expert Systems with Tools – Shells And Environments – Software Selection – Hardware – Rapid Prototyping and a Demonstration Prototype - System Development – Implementation – Post Implementation.

Unit - V Management Support Systems**9 hrs**

Implementing and Integrating Management Support Systems : Implementation- The Major Issues - Strategies – System Integration – Generic Models of MSS, DSS, ES – Integrating EIS, DSS and ES - Global Integration – Intelligent DSS – Intelligent Modeling and Model Management – Examples of Integrated Systems – Problems and Issues in Integration.

Impacts of Management Support Systems: Organizational Structure and Related Areas – MSS Support to Business Process Reengineering – Personnel Management Issues – Impact on Individuals, Productivity, Quality and Competitiveness – Decision Making and the Manager’s Job – Issues of Legality, Privacy and Ethics – Intelligent Systems and Employment Levels – Internet Communities – Other Societal Impacts – Managerial Implications and Social Responsibilities.

TOTAL : 45 Hrs**TEXT BOOK**

1. Efrain Turban, Jay E.Aronson, “Decision Support Systems and Intelligent Systems”, Sixth edition, Pearson Education, 2001.

REFERENCES

1. Ganesh Natarajan, Sandhya Shekhar, “Knowledge management – Enabling Business Growth”, Tata McGraw-Hill, 2002.
2. George M.Marakas, “Decision Support System”, Prentice Hall, India, 2003.
3. Efreem A.Mallach, “Decision Support and Data Warehouse Systems”, Tata McGraw-Hill, 2002.

CSE115

ADVANCED DATABASE TECHNOLOGIES

3 0 0 3

Unit - I

9 hrs

Distributed DBMS Concepts and Design: Introduction – Functions and Architecture of DDBMS – Distributed Relational Database Design – Transparency in DDBMS – Date's Twelve Rules for a DDBMS

Unit - II

9 hrs

Distributed Transaction Management – Concurrency control – Deadlock Management – Database Recovery – The X/Open Distributed Transaction Processing Model –Replication Servers – Distribution and Replication in Oracle

Unit - III

9 hrs

Object Oriented Databases: Introduction – Weakness of RDBMS – Object Oriented Concepts Storing Objects in Relational Databases – Object Oriented Data models – OODBMS Perspectives – Persistence – Issues in OODBMS – Advantages and Disadvantages of OODBMS.

Unit - IV

9 hrs

Object Oriented Database Design: OODBMS Standards and Systems – Object Management Group – Object Database Standard ODMG – Object Relational DBMS – Comparison of ORDBMS and OODBMS.

Unit -V

9 hrs

Active Database Concepts and Triggers – Temporal Database Concepts – Deductive Databases - Mobile Database – Multimedia Database – Spatial Databases

TOTAL : 45 Hrs

TEXT BOOK

1. Thomas M. Connolly and Carolyn E. Begg, "Database Systems - A Practical Approach to Design, Implementation, and Management", Third edition, Pearson Education, 2003.

REFERENCES

1. Ramez Elmasri and Shamkant B.Navathe, "Fundamentals of Database Systems", Fourth edition, Pearson Education, 2004.
2. M.Tamer Ozsü and Patrick Ualduriel, "Principles of Distributed Database Systems", Second edition, Pearson Education, 2003.
3. C.S.R.Prabhu, "Object Oriented Database Systems", PHI, 2003.
4. Peter Rob and Corlos Coronel, "Database Systems – Design, Implementation and Management", Thompson Learning, Course Technology, Fifth edition, 2003

ECE273

ANALOG AND DIGITAL COMMUNICATION

3 0 0 3

Unit - I Fundamentals of Analog Communication

9 hrs

Principles of Amplitude Modulation - AM Envelope - Frequency Spectrum and Bandwidth - Modulation Index and Percent Modulation - AM Voltage Distribution - AM Power Distribution - Angle Modulation - FM and PM Waveforms - Phase Deviation and Modulation Index - Frequency Deviation and Percent Modulation - Frequency Analysis of Angle Modulated Waves. Bandwidth Requirements for Angle Modulated Waves - Average Power of An Angle Modulated Wave.

Unit - II Digital Communication

9 hrs

Introduction - Shannon Limit for Information Capacity - Digital Amplitude Modulation - Frequency Shift Keying - FSK Bit Rate and Baud - FSK Transmitter - BW Consideration of FSK - FSK Receiver - Phase Shift Keying – Binary Phase Shift Keying – QPSK - Quadrature Amplitude Modulation - Bandwidth Efficiency - Carrier Recovery – Squaring Loop - Costas Loop - DPSK.

Unit - III Digital Transmission

9 hrs

Introduction - Pulse Modulation - PCM – PCM Sampling - Sampling Rate - Signal To Quantization Noise Rate - Companding – Analog and Digital – Percentage Error - Delta Modulation - Adaptive Delta Modulation - Differential Pulse Code Modulation - Pulse Transmission – Intersymbol Interference - Eye Patterns.

Unit - IV Data Communications

9 hrs

Introduction - History of Data Communications - Standards Organizations for Data Communication - Data Communication Circuits - Data Communication Codes - Error Control - Error Detection - Error Correction - Data Communication Hardware - Serial and Parallel Interfaces - Data Modems - Asynchronous Modem - Synchronous Modem - Low-Speed Modem - Medium and High Speed Modem - Modem Control.

Unit - V Spread Spectrum and Multiple Access Techniques

9 hrs

Introduction - Pseudo-Noise Sequence - DS Spread Spectrum With Coherent Binary PSK - Processing Gain - FH Spread Spectrum - Multiple Access Techniques – Wireless Communication - TDMA and CDMA in Wireless Communication Systems.

TOTAL: 45 Hrs

TEXT BOOKS

1. Wayne Tomasi, 'Electronic Communication Systems', Pearson Education, Third edition, 2001.
2. Simon Haykin, "Communication Systems", Fourth edition, John Wiley & Sons. 2001.

REFERENCES

1. Taub, D L Schilling and G Saha, "Principles of Communication", Third edition, 2007.
2. B.P.Lathi, "Modern Analog and Digital Communication Systems", Third edition, Oxford University Press, 2007
3. Blake, "Electronic Communication Systems", Thomson Delmar Publications, 2002.
4. Martin S.Roden, "Analog and Digital Communication System", Third edition, Prentice Hall of India, 2002.
5. B.Sklar,"Digital Communication Fundamentals and Applications", Second edition, Pearson Education, 2007.

Unit - I Numerical Solution of Algebraic and Transcendental Equations 9L + 3T hrs

Linear interpolation method (method of false position) – Iteration method - Newton's method - Solution of linear system by Gaussian elimination and Gauss-Jordan methods- Iterative methods: Gauss Jacobi and Gauss-Seidel methods – Inverse of matrix by Gauss – Jordan method

Unit - II Interpolation 9L + 3T hrs

Newton's forward and backward difference formulas – Stirling's formula - Divided differences – Newton's divided difference formula - Lagrange's interpolation (derivations are excluded for all methods).

Unit - III Numerical Differentiation and Integration 9L + 3T hrs

Numerical differentiation: Derivatives by using Newton's forward , backward and divided differences – Derivatives by using Stirling's formula - Numerical integration by Trapezoidal and Simpson's 1/3 and 3/8 rules – Double integrals using Trapezoidal and Simpson's 1/3 rules.

Unit - IV Numerical Solution of Ordinary Differential Equations 9L + 3T hrs

Single step methods: Taylor's series method – Euler and Improved Euler methods for solving first order equations – Fourth order Runge – Kutta method for solving first and second order equations – Multistep method: Milne's predictor and corrector method.

Unit - V Numerical Solution of Partial Differential Equations 9L + 3T hrs

Finite difference solution of one dimensional heat equation by Bender Schmidt and Crank Nicholson methods – One dimensional wave equation by explicit method and two dimensional Laplace and Poisson equations

TUTORIAL: 15 Hrs
TOTAL : 60 Hrs

TEXT BOOK

1. Venkataraman M.K., "Numerical Methods in Science and Engineering", The National Publishing company, 5th Edition, May 2003.

REFERENCES

1. Gerald C. F. and Wheatley P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2002.
2. Sastry S.S, "Introductory Methods of Numerical Analysis", Third Edition, Prentice – Hall of India Pvt Ltd, New Delhi, 2003.
3. Kandasamy P., Thilagavathy K. and Gunavathy K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2007.

Unit - I Introduction and Lexical Analysis**9L + 3T hrs**

Language Processors – The Structure of a Compiler – Applications of Compiler Technology – Programming Language Basics - Lexical Analysis – The Role of the Lexical Analyzer – Input Buffering – Specification of Tokens – Recognition of Tokens – The Lexical-Analyzer Generator - LEX– Finite Automata – From Regular Expression to Automata – Design of a Lexical-Analyzer Generator – Optimization of DFA-Based Pattern Matchers.

Unit - II Syntax Analysis**9L + 3T hrs**

Introduction – Context-Free Grammars – Writing a Grammar – Top-Down Parsing – Recursive-Descent Parsing and Predictive Parsers - Bottom-up Parsing – Shift-Reduce Parsing and Operator Precedence Parsing - Introduction to LR Parsing: Simple LR – More Powerful LR Parsers – Canonical LR and LALR Parsers.

Unit - III Intermediate Code Generation**9L + 3T hrs**

Variants of Syntax Trees – Three-Address Code – Types and Declarations – Translation of Expressions – Type Checking – Control Flow – Backpatching – Switch-Statements – Intermediate Code for Procedures.

Unit - IV Code Generation**9L + 3T hrs**

Issues in the Design of a Code Generator – The Target Language – Addresses in the Target Code – Basic Blocks and Flow Graphs – Optimization of Basic Blocks – A Simple Code Generator – Peephole Optimization.

Unit - V Code Optimization and Run-Time Environment**9L + 3T hrs**

The Principal Sources of Optimization – Introduction of Data-Flow Analysis – Loops in Flow Graphs - Run-Time Environments – Storage Organization – Stack Allocation of Space – Heap Management

LECTURE: 45 Hrs TUTORIAL : 15 Hrs**TOTAL: 60 Hrs****TEXT BOOK**

1. Alfred V. Aho, Monica S. Lam, Ravi Sethi and Jeffrey D. Ullman, “Compilers Principles, Techniques and Tools”, Second edition, Pearson Education, 2007.

REFERENCES

1. Allen I. Holub, “Compiler Design in C”, Prentice Hall of India, 2003.
2. C.N. Fischer and R.J. LeBlanc, “Crafting a Compiler with C”, Benjamin Cummings, 2003.
3. J.P. Bennet, “Introduction to Compiler Techniques”, Second edition, Tata McGraw-Hill, 2003.
4. Henk Alblas and Albert Nymeyer, “Practice and Principles of Compiler Building with C”, PHI, 2001.
5. Kenneth C. Loudon, “Compiler Construction: Principles and Practice”, Thompson Learning, 2003.

Implementation of project using Software Engineering Techniques:

1. **PROJECT PLANNING:** Prepare a Software Project Management Plan (SPMP) to give brief overview of the project.
2. **SOFTWARE REQUIREMENT ANALYSIS :** Prepare a Software Requirement Specification (SRS) in IEEE format
3. **DATA MODELING & IMPLEMENTATION :** Draw various diagrams like Data Flow Diagram (DFD), ER Diagram, Use Case Diagram etc
4. **SOFTWARE TESTING:** Prepare Test Plan & Test Reports
5. **SOFTWARE DEBUGGING:** Record the debugging experience

Perform Verification & Validation at each stage and generate appropriate deliverables.

LIST OF SAMPLE PROJECTS

Develop the following using Software Engineering methodologies:

1. Online Railway Ticket Reservation System
2. Simulator Software for Parallel Processing Operation
3. Payroll Processing System
4. Inventory System
5. Simulator Software for Compiler Operation
6. Automating the Banking System
7. Development of Computer Games
8. Library Management System
9. Text Editor
10. Create a Dictionary
11. Telephone Directory
12. Create an E – Book of Your Choice

SOFTWARE REQUIRED:

Languages: C/C++/JDK 1.3, JSDK, WEB BROWSER & UML, Any Front End Tools (like VB, VC++, Developer 2000) Any Back End Tools (like Oracle, MS- Access, SQL)

1. Write a program that takes a binary file as input and performs bit stuffing and CRC computation.
2. Implementation of Sliding-Window protocol.
3. Implementation of Link state routing protocol.
4. Implementation of Distance Vector routing protocol
5. Develop a Client – Server based Echo application using TCP and UDP Protocols.
6. Develop a Client – Server based Chat application using TCP and UDP Protocols.
7. File Transfer using UDP/ TCP.
8. Implementation of ARP.
9. Simulation of multicasting.

1. Citizenship- its significance-Enlightened citizenship.
2. Emerging India-its glory today- Global perspective-other view about India.
3. Indian culture and its greatness.
4. India and Peace.
5. India and Spirituality- Great spiritual leaders.
6. India's message to the world – its role in global peace.
7. Service and sacrifice-Unity in diversity – case studies-live examples.
8. National values identification and practice.
9. Yogasanas- II.
10. Meditation III. [Nithyanandam& Nine Centre Meditation]

Unit - I**6 hrs**

Biological Basis for Neural Networks - Evolutionary Computation – Behavioral Motivations for Fuzzy Logic – Application Areas – Computational Intelligence Development

Unit - II**11 hrs**

Neural Network Theory – Components and Terminology – Topologies – Learning – Recall – Taxonomy - Preprocessing & Post Processing – Implementation of Neural Network – Back Propagation – Learning Vector Quantizer – Radial Basis Function Networks – Kohonen Self Organizing Maps.

Unit - III**11 hrs**

Evolutionary Computation Theory – Overview - Genetic Algorithm – Simple Example Problem – Programming – Strategies – Genetic Programming – Implementation of Genetic Algorithm and Particle Swarm Optimizer.

Unit - IV**11 hrs**

Fuzzy System Theory – Fuzzy Sets and Fuzzy Logic – Approximate Reasoning – Issues – Fuzzy Systems Implementation.

Unit - V**6 hrs**

Computation Intelligence Theory - Definitions – Relationships among Components of Intelligent Systems Implementations – Metrics

TOTAL : 45 Hrs**TEXT BOOK**

1. Russ Eberhart, Pat Simpson and Roy Dobbins, “Computational Intelligence–PC tools”, AP Professional, 1996.

REFERENCES

1. S.N.Sivanandam and S.N.Deepa, “Principles of Soft Computing”, Wiley India (P) Ltd, First edition, 2007.
2. Simon Haykin, “Neural Networks, A Comprehensive Foundation”, Second edition, Addison Wesley Longman, 2001.
3. Timothy J.Ross, “Fuzzy Logic with Engineering Application “, McGraw Hill, 1977.
4. Davis E.Goldberg, “Genetic Algorithms: Search, Optimization and Machine Learning”, Addison Wesley, N.Y., 1989.
5. S.Rajasekaran and G.A.V.Pai, “Neural Networks, Fuzzy Logic and Genetic Algorithms”, PHI, 2003.

Unit - I Intensity Transformations and Spatial Filtering 9 hrs

Basic Relationship between Pixels - Intensity Transformation Functions - Histogram Processing - Fundamentals of Spatial Filtering - Smoothing Spatial Filters - Sharpening Spatial Filters

Unit - II Filtering in Frequency Domain 9 hrs

Basics of Filtering in the Frequency Domain - Image Smoothing using Frequency Domain Filters - Image Sharpening using Frequency Domain Filters - Selective Filtering

Unit - III Image Restoration 9 hrs

Model of the Image Degradation/Restoration Process - Noise Models - Restoration using Spatial Filtering - Noise Reduction by Frequency Domain Filtering – Inverse Filtering - Wiener Filtering – Constrained Least Mean Square Filtering - Geometric Mean Filter

Unit - IV Color Image Processing 9 hrs

Pseudo Color Image Processing – Basics of Full-Color Image Processing – Color Transformations – Smoothing and Sharpening – Image Segmentation based on Color – Noise in Color Images.

Unit V Image Segmentation 9 hrs

Fundamentals - Point, Line, and Edge Detection - Thresholding - Region-Based Segmentation

TOTAL : 45 Hrs

TEXT BOOK

1. R.C. Gonzalez and R.E. Woods, “Digital Image Processing”, Third edition, Prentice Hall, 2008

REFERENCES

1. William K Pratt, “Digital Image Processing”, John Willey, 2001
2. A.K. Jain, “Fundamentals of Digital Image Processing”, PHI, New Delhi, 2003.
3. Milan Sonka, et.al, “Image Processing, Analysis and Machine Vision”, Second edition, PWS Publishing, 1999.

Unit – I Uses of Multimedia Information**9 hrs**

Multimedia and Personalized Computing - Multimedia Systems: The Challenges. Architectures and Issues for Distributed Multimedia Systems: Distributed Multimedia Systems – Synchronization - Orchestration - and QOS Architecture – The Role of Standard - A Framework For Multimedia Systems. Digital Representation of Sound – Transmission of Digital Sound - Digital Audio Signal Processing - Digital Music Making – Brief Survey of Speech Recognition and Regeneration – Digital Audio and the Computer.

Unit - II Digital Video and Image Compression**9 hrs**

Evaluating a Compression System – Redundancy and Visibility – Video Compression Techniques – JPEG Image Compression Standard – The MPEG Motion Video Compression Standard – DVI Technology - Middleware System Services Architecture – Goals of Multimedia System Service Architecture – Media Stream Protocol - Multimedia Device Presentation Service and User Interface - Multimedia Services and the Window System - Client Control of Continuous Media - Device Control - Temporal Coordination and Composition - Tool Kits - Hyper Applications.

Unit - III Multimedia File Systems and Information Models**9 hrs**

The Case for Multimedia Information Systems – File System Support for Continuous Media – Data Models for Multimedia and Hypermedia Information - Multimedia Presentation and Authoring: Current State of the Industry – Design Paradigms and User Interface – Barriers to Widespread Use.

Unit - IV Multimedia Communications Systems**9 hrs**

Multimedia Services over the Public Network: Requirements, Architecture and Protocols – Applications – Network services – Network Protocols- Multimedia Interchange: Quick Time Movie File (QMF) Format – MHEG (Multimedia and Hypermedia Information Encoding Expert Group) – Format Function and Representation Summary – Real-Time Interchange - Multimedia Conferencing: Teleconferencing Systems – Requirements for Multimedia Communications – Shared Application Architectures and Embedded Distributed Objects – Multimedia Conferencing Architectures.

Unit - V Multimedia Groupware**9 hrs**

Seams and Design Approaches – Architecture of Team Workstation – Experimental use of Team WorkStation - Nomenclature – Video versus Computing – HDTV, ATV, EDTV, IDTV – Standardization Issues - Knowledge-based Multimedia Systems – Problems Facing Multimedia Systems – The Anatomy of an Intelligent Multimedia Systems.

TOTAL : 45 Hrs**TEXT BOOK**

1. John. F. Koegel Buford, “Multimedia Systems”, Pearson Education, 2001.

REFERENCES

1. Nigel Chapman and Jenny Chapman, “Digital Multimedia”, John Wiley & Sons, 2000.

ITY108

ADVANCED JAVA PROGRAMMING

3 0 0 3

Unit - I

9 hrs

Graphics Programming - Introduction to Swing, Frames, Text & Fonts Images – Event Handling: Basics – Semantic & Low Level Events.

Unit - II

9 hrs

MVC Design pattern – Introduction to Layout Management – Text Input – Choices – Sophisticated Layout Management – Menus

Unit - III

9 hrs

Sockets for Clients – Socket Basics – Socket Class – Socket for Servers – Server Socket Class – UDP Datagram & Sockets – Multicast Sockets - RMI.

Unit - IV

9 hrs

Java Database Connectivity - Servlet programming - JSP: Introduction - Scripting Elements and Directives

Unit - V

9 hrs

JavaMail: Protocols – Components – JavaMail API – Java Messaging Service: Introduction – Messaging models – Components – Reliable Messaging - EJB Architecture and Design - Types - Container Functionality

TOTAL : 45 Hrs

TEXT BOOKS

1. Hortsman & Cornell, “Core Java 2 Fundamentals”, Vol-I, Pearson Education, Eighth edition, 2008 (Unit I and II).
2. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly publishers, Third edition, 2004. (Unit III).
3. James-McGovern, et. al, “Java 2 Enterprise Edition 1.4 (J2EE 1.4) Bible”, Wiley Publications, 2003. (Unit IV and V)

REFERENCES

1. Web reference: <http://java.sun.com>.
2. Patrick Naughton, “Complete Reference: JAVA2”, Tata McGraw-Hill, 2003.

LIST OF EXPERIMENTS:

1. Generate a plot of $y(x) = e^{-0.5x} \sin wx$ where $w=10$ rad/s, $0 \leq x \leq 10$, by generating the x vector in increments of 0.1
2. Compute the roots of given polynomial: $ax^2 + bx + c = 0$
3. Create a M-file for palindrome recognition function using a perceptron network.
4. Write a MATLAB program for BPN to generate XOR function. Study the network with varying momentum and learning rate
5. Demonstrate Kohonen Self Organizing Feature Map to cluster given vectors
6. Demonstrate LVQ net to classify the given vectors
7. Create a M-File for doing the following set operations on the given fuzzy sets A and B.
 $A \cup B$, $A \cap B$, $\overline{A}$, $\overline{B}$, De Morgan's Law
8. Implement Radial Basis Function classification network and tabulate the classification rate for various percentage of training and testing samples
9. With FIS for controlling the water level or temperature in the boiler using Mamdani and Sugeno models. Assume your own linguistic variables
10. Find the local and global minima for the given function using Genetic Algorithm

List of suggested functions:

(i) $y = \sin(10x)$

(ii) $f(x, y) = 3(x - 0.5)^2 + 5(y - 0.7)^2$

LIST OF EXPERIMENTS:

The following experiments are to be implemented using the Image processing toolbox.

1. Point processing operations - Image negation and contrast stretching need to be carried out on images.
2. Point processing operations - Dynamic range compression, thresholding and gray level slicing need to be carried out on images.
3. Logic operations – Perform AND, OR, NOT, XOR operations on the given input images.
4. Arithmetic operations – Perform addition, subtraction, multiplication and division of two different images and display the resultant images.
5. Histogram equalization – Obtain the histogram of the given image and enhance the input image by equalizing its histogram.
6. Image enhancement using spatial filtering – Perform HPF, LPF, median filtering and high-boost filtering over the given noisy images.
7. Image enhancement using frequency domain filtering – Perform HPF and LPF over the given noisy images.
8. Image enhancement using frequency domain filtering – Perform homomorphic filter over the given noisy images.
9. Image segmentation – Perform point, line and edge detection of the given images.
10. Perform bit plane slicing and bit removal operations on the given image.

LIST OF EXPERIMENTS:

The following programs are to be prepared using Macromedia Flash MX and Adobe Photoshop

1. Animate - Shooting a bullet towards a target.
2. Animate an Analog Clock.
3. Animate - Bird on a Journey.
4. Animate the designs as seen in a Kaleidoscope on rotation.
5. Using spotlight effect, display your name.
6. Animate a Car Race.
7. Animate 3 different colored balls bouncing. (Random motion of balls)
8. Prepare a HTML program making a call to a flash program.
9. Create a landscape scene using Adobe Photoshop.
10. Use images of individuals to create a group photo and separate individual images from group photo.
11. Create a mirror image of a scene containing a person and a few objects in the background.
12. Construct a flower vase using photographic images of a jar and individual flowers.

1. Java swing – Using Frames, Panel, Text & Fonts images.
2. Java swing – Event handling.
3. Java swing – Layout management.
4. Java swing – Menus, Choices.
5. Write a program for communication between TCP clients & TCP servers.
6. Write a program for communication between UDP clients & UDP servers.
7. Session tracking in Servlets.
8. Processing form with Servlets.
9. Illustration of basic JSP tags & JDBC to do basic operations for any one of the following applications.
 - a. Bank Management System.
 - b. Railway Reservation System
 - c. Library Management System
 - d. Airline Reservation System
 - e. Course Registration System
 - f. College Management System
10. Write a simple program to send a message using Java Mail.

3 0 0 3

9 hrs

9 hrs

9 hrs

9 hrs

9 hrs

TOTAL : 45 Hrs

- ## REFERENCE

CSE120

MULTIMEDIA DATABASES

3 0 0 3

Unit - I Introduction

9 hrs

Overview of Database Management – Threshold Architecture – Informal Look at the Relational Model – Functional Dependencies – Basic Definition and some Examples – 1NF, 2NF, 3NF, BCNF.

Unit - II Normal Form

9 hrs

Multivalued Dependencies – Definition and Examples – 4NF – Join Dependencies: Definitions and Examples – 5NF.

Unit - III OODB and Advanced Data Structures

9 hrs

Introduction to OODBMS – K-D trees – Point Quad Trees – R-trees

Unit - IV Image and Text Databases

9 hrs

Similarity Based Retrieval – Representing Image DBs with Relation – Representing Image DBs with RTrees – Stop Lists – Words Term and Frequency Tables – Latent Semantic Indexing – TV Trees.

Unit - V Video and Audio Databases

9 hrs

Organizing Content of a Single Video – Querying content of Video Libraries – General Model of Audio Data – Indexing Audio Data

TOTAL : 45 Hrs

TEXT BOOKS

1. Elmasri and Navathe, “Fundamentals of Database System”, Third edition, Pearson Education, 2002.
2. V. S. Subramanian, “Principles of Multimedia Database System”, Morgan Kaufmann Publishers, Inc, 1998.

REFERENCES

1. C. J. Date, “An Introduction to Database Systems”, Seventh edition, Pearson Education, 2000.
2. S. Khoshafian and A. B. Bakor, “Multimedia and Imaging Databases”, Morgan Kaufmann, 1996.

Unit - I Introduction**9 hrs**

Introduction to Open Sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources - Open Source Operating Systems: LINUX: Introduction – General Overview – Kernel Mode and User Mode – Process – Advanced Concepts – Scheduling – Personalities – Cloning – Signals – Development with Linux.

Unit – II Open Source Database**9 hrs**

MySQL: Introduction – Setting up Account – Starting, Terminating and Writing your own SQL Programs – Record Selection Technology – Working with Strings – Date and Time– Sorting Query Results – Generating Summary – Working with Metadata – Using Sequences – MySQL and Web.

Unit – III Open Source Programming Languages**9 hrs**

PHP: Introduction – Programming in Web Environment – Variables – Constants –Data; Types – Operators – Statements – Functions – Arrays – OOP – String Manipulation and Regular Expression – File Handling and Data Storage – PHP and SQL Database – PHP and LDAP – PHP Connectivity – Sending and Receiving E-mails – Debugging and Error Handling – Security – Templates.

Unit – IV Python**9 hrs**

Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – Dictionaries – Conditionals and Loops – Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

Unit - V PERL**9 hrs**

PERL Backgrounder – PERL Overview – PERL Parsing Rules – Variables and Data – Statements and Control Structures – Subroutines - Packages and Modules - Working with Files – Data Manipulation.

TOTAL: 45 Hrs**REFERENCES**

1. Remy Card, Eric Dumas and Frank Mevel, “The Linux Kernel Book”, Wiley Publications, 2003
2. Steve Suchring, “MySQL Bible”, John Wiley, 2002
3. Rasmus Lerdorf and Levin Tatroe, “Programming PHP”, O’Reilly, 2002
4. Wesley J. Chun, “Core Python Programming”, Prentice Hall, 2001
5. Martin C. Brown, “Perl: The Complete Reference”, Second edition, Tata McGraw-Hill, Indian Reprint, 2009.
6. Steven Holzner, “PHP: The Complete Reference”, Second edition, Tata McGraw-Hill, Indian Reprint, 2009.
7. Vikram Vaswani, “MYSQL: The Complete Reference”, Second edition, Tata McGraw-Hill, Indian Reprint, 2009.

Unit - I Introduction to C# 8 hrs

Introducing C# - Understanding .NET - Overview of C# - Literals - Variables - Data Types - Operators - Expressions - Branching - Looping - Methods - Arrays - Strings - Structures – Enumerations.

Unit - II Object Oriented Aspects of C# 9 hrs

Classes - Objects - Inheritance - Polymorphism - Interfaces - Operator Overloading - Delegates – Events.

Unit - III Windows Programming 8 hrs

Basic Windows Programming – Controls: Button Control – Label and Linkable Controls – Textbox Control – Radio button and Checkbox Controls – Rich Textbox Control – Listbox and Checkedlistbox Controls – Listview Control – Advanced Windows Forms: Menus and Toolbars.

Unit - IV Web Programming – ASP .NET 8 hrs

Basic Web Programming – Simple Page Creation – Server Controls – Event Handlers – Input Validation – State Management – ADO.NET – Overview – Reading Data with Data Reader and Dataset – Updating the Database – Accessing Multiple Tables in a Dataset – SQL Support in ADO.NET.

Unit - V Web Services & Streams 12 hrs

Web Services – Usage of Web Services – Web Services Architecture – Web Service and .NET Framework – Creating Simple Asp.Net Web Services – Displaying Web Applications Streams: Classes for Input and Output.

TOTAL : 45 Hrs

TEXT BOOKS

1. E. Balagurusamy, “Programming in C# - A Primer”, Tata McGraw-Hill, Second Edition, 2008. (Unit I, II)
2. Karli Watson, et. al, “Beginning Microsoft Visual C# 2008”, Wiley Publications, 2008.

REFERENCES

1. Herbert Schildt, “The Complete Reference: C#”, Tata McGraw-Hill, 2004.
2. Robinson et al, “Professional C#”, Second edition, Wrox Press, 2002.
3. Andrew Troelsen, “C# and the .NET Platform”, AI Press, 2003.
4. S.Thamarai Selvi and R.Murugesan, “A Textbook on C#”, Pearson Education, 2003.

Unit - I Architecture of Embedded Systems**9 hrs**

Categories of Embedded Systems – Specialties of Embedded Systems – Recent Trends in Embedded Systems – Hardware Architecture – Software Architecture – Communication Software – Process of Generation of Executable Image – Development / Testing tools.

Unit - II Devices and Buses for Devices Network**9 hrs**

I/O Devices - Types and Examples – Synchronous, Iso-Synchronous and Asynchronous Communications from Serial Devices – Examples of Internal Serial Communication Devices – UART and HDLC - Parallel Device Ports – Sophisticated Interfacing Features in Devices/Ports – Timers and Counting Devices – Serial Bus Communication Protocols: I²C, USB, CAN and Advanced I/O Serial high Speed Buses – Parallel bus Device Protocols: ISA, PCI, PCI/X, ARM bus and Advanced Parallel high Speed Buses.

Unit - III Hardware Platform**9 hrs**

PIC Microcontroller - Architecture of PIC 16C6X/7X – FSR – Reset Action – Oscillatory Connection – Memory Organization – Instructions – Addressing modes – I/O Ports – Interrupts – Timers – ADC – Assembly language Programming.

Unit - IV Real-Time Operating System Concepts**9 hrs**

Architecture of the Kernel – Task and Task Scheduler – Interrupt Service Routines – Semaphores – Mutex – Mailboxes – Message Queues – Event Registers – Pipes – Signals – Timers – Memory Management - Priority Inversion Problem.

Unit - V Real-Time Operating System Tools and Concepts Case Studies**9 hrs**

Study of μ C/OS-II – RTOS System Level Functions – Task Service Functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore Related Functions – Mailbox Related Functions – Queue Related Functions – Case Study of Embedded Systems like Digital Camera and Smart Card.

TOTAL : 45 Hrs**TEXTBOOKS**

1. Prasad K.V.K.K, “Embedded/Real-Time Systems: Concepts, Design and Programming”, Dream Tech Press, Reprint, 2009.
2. Ajay V Deshmukh, “Microcontroller Theory and Applications”, Tata McGraw-Hill, 2007.
3. Raj Kamal, “Embedded Systems Architecture, Programming and Design”, Tata McGraw-Hill, Second Edition, 2008.

REFERENCES

1. David E.Simon, “An Embedded Software Primer”, Pearson Education, 2003.
2. Daniel W Lewis, “Fundamentals of Embedded Software”, Pearson Education Asia, 2001.
3. John B Peatman, “Designing with PIC Microcontroller”, Pearson, 1998.

Unit - I Introduction 10 hrs

OSI Security Architecture - Classical Encryption Techniques – Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation – Evaluation Criteria for AES – AES Cipher – Triple DES – Placement of Encryption Function – Traffic Confidentiality.

Unit - II Public Key Cryptography 10 hrs

Key Management - Diffie-Hellman Key Exchange – Elliptic Curve Architecture and Cryptography - Introduction to Number Theory – Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA

Unit – III Authentication and Hash Function 9 hrs

Authentication Requirements – Authentication Functions – Message Authentication Codes – Hash Functions – Security of Hash Functions and MACs – Secure Hash Algorithm – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard.

Unit - IV Network Security 8 hrs

Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security.

Unit – V System Level Security 8 hrs

Intrusion Detection – Password Management – Viruses and Related Threats – Virus Counter Measures – Firewall Design Principles – Trusted Systems

TOTAL : 45 Hrs

TEXT BOOK

1. William Stallings, “Cryptography and Network Security – Principles and Practices”, Prentice Hall of India, Fourth Edition, 2003

REFERENCES

1. Atul Kahate, “Cryptography and Network Security”, Tata McGraw-Hill, 2003
2. Bruce Schneier, “Applied Cryptography”, John Wiley & Sons Inc, 2001.
3. Charles B. Pfleeger and Shari Lawrence Pfleeger, “Security in Computing”, Third edition, Pearson Education, 2003.

Unit - I Internet Protocols – I**9 hrs**

Internetworking Concept and Architectural Model – Classful Internet Addresses - Mapping Internet Addresses to Physical Addresses (ARP) - Determining an Internet Address at Startup (RARP) - Internet Protocol: Connectionless Datagram Delivery - Internet Protocol: Routing IP Datagrams - Internet Protocol: Error and Control messages (ICMP) – Classless Inter Domain Routing (CIDR) – Classless Addressing (Supernetting) – The Effect of Supernetting on Routing – CIDR Address Blocks and Bit Masks – Address Blocks and CIDR Notation.

Unit - II Internet Protocols – II**9 hrs**

Reliable Stream Transport Service (TCP) – Timeout and Retransmission – Accurate Measurement of Round Trip Samples - Karn's Algorithm and Timer Backoff – Establishing a TCP Connection – Closing a TCP Connection – TCP Connection Reset – TCP State Machine – Silly Window Syndrome and Small Packets – Avoiding Silly Window Syndrome - Internet Multicasting - Internet Group Management Protocol (IGMP) - IGMP Implementation - Group Membership State Transitions - IGMP Message Format - Auto configuration (DHCP) - IPv6 : Features of IPv6 - General form of an IPv6 Datagram - IPv6 Base Header Format - IPv6 Extension Headers - Parsing an IPv6 Datagram - IPv6 Fragmentation and Reassembly -The Consequence of End to End Fragmentation - IPv6 Source Routing - IPv6 options

Unit - III Elementary TCP Sockets**7 hrs**

Introduction to Sockets – Socket Address Structures – Byte Ordering Functions – Byte Manipulation Functions – Elementary TCP Sockets – Socket, Connect, Bind, Listen, Accept, Read, Write, Close Functions – Iterative Server – Concurrent Server.

Unit - IV Application Development**10 hrs**

TCP Echo Server – TCP Echo Client – UDP Echo Server – UDP Echo Client – Server with Multiple Clients – Boundary Conditions: Server Process Crashes - Server Host Crashes - Server Crashes and Reboots - Server Shutdown – I/O multiplexing – I/O Models – Select Function – Shutdown Function – Poll Function.

Unit - V Socket Options, Elementary Name & Address Conversions**10 hrs**

Socket Options – getsocket and setsocket Functions – Generic Socket Options – IP Socket Options – ICMP Socket Options – TCP Socket Options – Elementary UDP Sockets –Domain Name System – gethostbyname Function – gethostbyaddr Function – getservbyname and getservbyport Functions.

TOTAL: 45 Hrs

TEXT BOOKS

1. D.E. Comer, “Internetworking with TCP/IP Vol-I (Principles, Protocols and Architectures)”, PHI, Fourth edition, 2003. (Unit – I & II)
2. W. Richard Stevens, “Unix Network Programming Vol-I”, PHI / Pearson Education, Second edition, 1998. (Units – III, IV & V.)

REFERENCES

1. D.E. Comer, D.L. Stevens, “Internetworking with TCP/IP Volume II: Design, Implementation and Internals”, PHI, Third Edition, 1999.
2. D.E. Comer, “Internetworking with TCP/IP Vol- III”, (BSD Sockets Version), Second edition, PHI, 2003.
3. Behrouz A. Forouzan, “TCP / IP Protocol Suite”, Tata McGraw Hill, Third edition, 2005.

Unit – I Signals and Systems**9 hrs**

Classification of Systems: Continuous - Discrete - Linear - Causal - Stable - Dynamic - Recursive - Time Variance - Classification of Signals: Continuous and Discrete - Energy and Power - Mathematical Representation of Signals - Spectral Density - Sampling Techniques - Quantization - Quantization Error – Nyquist Rate - Aliasing Effect - Digital Signal Representation - Analog to Digital Conversion

Unit - II Discrete Time System Analysis**9 hrs**

Z-transform and its Properties- Inverse Z-Transforms- Difference Equation – Solution by Z Transform - Application to Discrete Systems - Stability Analysis - Frequency Response – Convolution – Fourier Transform of Discrete Sequence.

Unit - III Discrete Fourier Transform**9 hrs**

DFT Properties - Magnitude and Phase Representation - Computation of DFT using FFT Algorithm – DIT and DIF - FFT using Radix 2 - Butterfly Structure.

Unit - IV Design of Digital Filters**9 hrs**

FIR and IIR Filter Realization – Parallel and Cascade Forms - FIR design: Windowing Techniques – Need and Choice of Windows – Linear Phase Characteristics - IIR design: Analog Filter Design - Butterworth and Chebyshev Approximations - Digital Design using Impulse Invariant and Bilinear Transformation – Prewarping - Frequency Transformation.

Unit - V Programmable DSP Chips**9 hrs**

Architecture and Features of TMS 320C54XX Processor - Introduction to MATLAB – Programming and Realization using MATLAB - Representation of Basic Signals - Linear and Circular Convolution of Two Sequences - Implementation of DFT and FFT.

TOTAL: 45 Hrs**TEXT BOOKS**

1. M.H.Hayes, “Digital Signal Processing”, Schaum’s Outlines, Tata McGraw Hill, New Delhi, 2007 (Units I to IV).
2. B.Venkataramani and M.Bhaskar, “Digital Signal Processors, Architecture, Programming and Applications”, Tata McGraw Hill, New Delhi, 2003. (Unit V).

REFERENCES

1. J.G. Proakis and D.G. Manolakis, ‘Digital Signal Processing Principles, Algorithms and Applications’, Pearson Education, New Delhi, 2003.
2. Alan V. Oppenheim, Ronald W. Schaffer and John R. Buck, ‘Discrete – Time Signal Processing’, Pearson Education, New Delhi, 2003
3. Ramesh Babu, ‘Digital Signal Processing’, SciTech Publications (India) Pvt.Ltd., 2007.

OBJECTIVES

On completion of the course the students are expected

- To be aware of optimization of resources.
- To understand and apply operations research techniques to industrial operations.
- To know how to formulate and solve Linear Programming Problems using various techniques.
- To solve transportation and assignment problems.
- To analyze CPM and PERT networks and evaluate projects.
- To solve replacement problems of different types.
- To solve sequencing problem.
- To know various queuing models and to solve queue problems.

Unit- I Linear Programming Problem**9 hrs**

The phases of OR study – Formation of an L.P model – Graphical solution – Simplex algorithm – Artificial variable technique: Big M Method, Two-phase method.

Unit –II Transportation and Assignment Problem**9 hrs**

Initial basic solution by North West corner method – Least cost method – Vogels approximation method – Optimality test – MODI method - Unbalanced transportation problem- Assignment problem – Hungarian method – Unbalanced assignment problem.

Unit –III Network Models**9 hrs**

Shortest route – Minimal spanning tree – Maximum flow models – Project network: CPM and PERT network.

Unit –IV Replacement and Sequencing Models**9 hrs**

Replacement of items that deteriorate with time – Value of money changing with time – Not changing with time – Optimum replacement policy – Individual and group replacement - Sequencing problem: Models with n jobs with 2 machines – Problem with n jobs with 3 machines.

Unit -V Queuing Theory**9 hrs**

Queuing models – Queuing systems and structures – Notation – Single server and multi server models – Poisson input – Exponential service – Constant rate service

TOTAL : 45 Hrs**TEXT BOOK**

1. Taha, H.A., "Operations Research", Prentice Hall of India, New Delhi, 2007.

REFERENCES

1. Gupta, P.K., and Hira, D.S., "Operations Research "(2008) S.Chand and Co., New Delhi.
2. Gupta, P.K., and Hira, D.S., "Problems in Operations Research", S.Chand and Co., New Delhi, 2008.
3. Panneerselvam, "Operation Research", Prentice Hall of India, New Delhi, 2007.
4. Harvey M.Wagner, "Principles of Operations Research", Prentice Hall of India, New Delhi, 2007.

CSE124

BUSINESS PROCESS MODELS

3 0 0 3

Unit - I Understanding Business Process

9 hrs

Organizations as Systems - Effective Operations Management - Adding Value - Competing on Capabilities - Value Chain and Competitive Advantage

Unit - II Customer and Material Processing

9 hrs

Marketing in a Changing World - Relationship Marketing - Purchasing - Concept of a Manufacturing System - Logistics and Competitive Strategy - Reverse Logistics - The Triumph of Process

Unit - III Process Modeling

9 hrs

Process Modeler's Needs - Basic Concepts in Process Modeling - Modeling with RADS - Animating a Process.

Unit - IV Large Processes

9 hrs

Micro-Modeling of Processes - Modeling Large Processes - Process Patterns

Unit - V Managing the Model

9 hrs

Modeling the Materials in the Process – Analyzing a Process Model – Managing the Modeling.

TOTAL : 45 Hrs

TEXT BOOK

1. Davis Barnes (Editor), "Understanding Business: Process", Routledge, USA, 2000 [UNITS- 1,2].
2. Martyn A Ould, "Business Processes: Modelling and Analysis for Re-Engineering and Improvement", John Wiley & Sons, USA, 1995 [UNITS - 3,4,5].

REFERENCES

1. Howard Smith and Peter Fingar, "Business Process Management (BPM): The Third Wave", Meghan-Kiffer Press, USA, 2003.
2. Roger Burlton, "Business Process Management: Profiting from Process", SAMS, USA, 2001.
3. Mike Jacka J, Paulette J Keller, "Business Process Mapping: Improving Customer Satisfaction", John Wiley & Sons, USA, 2001.
4. Faisal Haque, "e-Enterprise: Business Models, Architecture and Components", Cambridge University Press, UK, 2000.
5. Ulric J Gelinas, Steve G Sutton and Jane Fedorowicz, "Business Processes and Information Technology", Thompson Learning, India, 2004.

Unit - I Introduction**9 hrs**

Overview of ERP and its Benefits - ERP and Related Technologies - Business Process Reengineering (BPR) - Data Warehousing - Data Mining - OLAP - Supply Chain Management

Unit - II ERP Implementation**9 hrs**

Lifecycle - Methodology - Hidden Costs - Organizing the Implementation – Vendors - Consultants and Users - Contracts with Vendors - Consultants and Employees - Project Management and Monitoring

Unit - III Business Modules**9 hrs**

Business Modules in an ERP Package – Finance – Manufacturing - Human Resources - Plant Maintenance - Materials Management - Quality Management - Sales and Distribution

Unit - IV ERP Market**9 hrs**

ERP Market Place - SAP AG - People Soft – Baan - JD Edwards – Oracle – QAD - SSA

Unit - V ERP - Present and Future**9 hrs**

Turbo Charge the ERP System – EIA - ERP and E-Commerce - ERP and Internet - Future Directions

TOTAL : 45 Hrs**TEXT BOOK**

1. Alexis Leon, “ERP Demystified”, Tata McGraw Hill, New Delhi, 2007.

REFERENCES

1. Joseph A Brady, Ellen F Monk, Bret Wagner, “Concepts in Enterprise Resource Planning”, Thompson Course Technology, USA, 2001.
2. Vinod Kumar Garg and Venkitakrishnan.N.K, “Enterprise Resource Planning - Concepts and Practice”, PHI, New Delhi, 2003

ITY107

MOBILE COMMUNICATIONS

3 0 0 3

Unit - I Wireless Communication Fundamentals

9 hrs

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

11 hrs

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

Unit - III Wireless LAN

9 hrs

Wireless LAN – IEEE 802.11 - Architecture – Services – MAC – Physical layer – IEEE 802.11a - 802.11b - 802.11g Standards – HIPERLAN – Bluetooth.

Unit - IV Mobile Network Layer

9 hrs

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

Unit - V Transport and Application Layers

7 hrs

Traditional TCP – Classical TCP improvements – WAP - WAP 2.0

TOTAL : 45 Hrs

TEXT BOOKS

1. Jochen Schiller, “Mobile Communications”, PHI/Pearson Education, Second Edition, 2003.

REFERENCES

1. William Stallings, “Wireless Communications and Networks”, PHI/Pearson Education, 2002.
2. Kaveh Pahlavan and Prasanth Krishnamoorthy, “Principles of Wireless Networks: A Unified Approach”, PHI/Pearson Education, 2003.
3. Uwe Hansmann et. al, “Principles of Mobile Computing”, Springer-India, 2009.
4. Krzysztof Wesolowski, “Mobile Communication Systems”, John Wiley and Sons Ltd, 2002.

OBJECTIVES

- To understand the managerial functions like planning, organizing, staffing, leading and controlling
- To understand TQM concepts and tools

Unit – I PLANNING 9 hrs

Contributions of F.W. Taylor and Henri Fayol, Nature and Purpose of planning – Steps involved in Planning – Types of plans – Plans at Individual, Department and Organization level – Managing by Objectives.

Unit - II ORGANIZING 9 hrs

Nature and Purpose of Organizing – Types of Business Organization – Organization Chart – Structure and Process – Strategies of Departmentation – Line and Staff authority – Benefits and Limitations. Centralization Vs De-centralization and Delegation of Authority - Staffing – Manpower Planning – Recruitment – Selection – Placement – Induction

Unit - III DIRECTION AND CONTROLLING 9 hrs

Nature and Purpose – Manager Vs. Leader – Motivation – Theories and techniques of motivation. Leadership – Styles and theories of leadership. Communication – Process – Types – Barriers – Improving effectiveness in Communication. Controlling – Nature – Significance – Tools and Techniques

Unit - IV TOTAL QUALITY MANAGEMENT CONCEPTS 9 hrs

Definition of quality - Dimensions of Quality - Quality Costs - Quality Statements - Contributions of Deming, Juran and Crosby - ISO 9000:2008 elements

Unit - V TQM TOOLS 9 hrs

Benchmarking - Quality Function Deployment (QFD) - Taguchi Quality Loss Function - Total Productive Maintenance (TPM) – FMEA - 5S - Kaizen - The seven tools of quality - New seven management tools

TOTAL: 45 Hrs

TEXT BOOKS

1. Harold Koontz & Heinz Weihrich, “Essentials of Management” – An International Perspective”, 8th Edition, Tata McGraw-Hill, 2009.
2. Dale H. Besterfield, “Total Quality Management”, (Indian Reprint 2004) Pearson Education, Inc.

REFERENCES

1. Tripathy PC and Reddy PN, "Principles of Management", Tata McGraw-Hill, 4th Edition, 2008
2. Dinkar Pagarem "Principles of Management", Sultan Chand & Sons, 2000
3. Kanagasapathi. P (2008) Indian Models of Economy, Business and Management, Prentice Hall of India, New Delhi, ISBN: 978-81-203-3423-6.
4. G.K. Vijayaraghavan and M. Sivakumar, "Principles of Management", Lakshmi Publications, 5th Edition, 2009.
5. Charles W.L. Hill and Steven L McShane, "Principles of Management, Tata Mc Graw – Hill, 2009.
6. James R. Evans & William M. Lidsay, "The Management and Control of Quality", South-Western (Thomson Learning), 2008.
6. Feighenbaum, A.V., "Total Quality Control", McGraw Hill, New York, 1993.
7. Oakland J.S., "Total Quality Management", Butterworth – Hcinemann Ltd., Oxford, 2004.
8. Narayana V. and Sreenivasan N.S. "Quality Management – Concepts and Tasks", New Age International, New Delhi, 2007.
9. Zeiri, "Total Quality Management for Engineers", Wood Head Publishers, 2000.

SOFTWARE PROJECT DEVELOPMENT:

Develop a software development project using CASE Tools. The problem selected should consist of atleast 10 Usecases.

1. Problem Analysis and Project Planning

Thorough study of the problem – Identification of project scope, objectives and preparation of S.R.S. (in IEEE format)

2. Software Requirement Analysis

Describe the individual phases / modules of the project, identify deliverables. Prepare test plan and test cases.

3. Modeling

Use relevant work products like data dictionary, use case diagram, sequence diagram, activity diagram, class diagram etc.

4. Coding (using appropriate language)**5. Software Testing**

Perform verification & validation at each stage and generate appropriate reports.

SUGGESTED LIST OF SAMPLE PROJECTS:**Develop the following using Software Engineering Methodology:**

1. College Information System
2. Super Market Automation System
3. Restaurant Automation System
4. Judiciary Information System
5. Student Academic Record Management System
6. Medicine Shop Automation
7. Automobile Parts Shop Automation
8. Quiz System
9. ATM Systems
10. Development of Computer Games
11. Railway Ticket Reservation System
12. Payroll Processing System
13. Inventory System
14. Library Management System
15. Book Shop Automation System
16. Text Editor

SOFTWARE REQUIRED:

Rational Software, Languages: C/C++/JDK 1.3, JSDK, WEB BROWSER & UML, Any Front End Tools (like VB, VC++, Developer 2000) Any Back End Tools (like Oracle, MS-Access, SQL).

1. Global values – understanding and identification – its importance.
2. Racial discrimination and solution – Ecological imbalance and solution.
3. Political upheavals and solution – Social inequality and solution – live case discussions and debate.
4. Cultural degradation and solution – live case discussions and debate.
5. Emergence of monoculture – solution.
6. Global terrorism – its cause and effect – solution.
7. Economic marginalization and solution – its impact on the globe.
8. Man is the cause and man is the solution.
9. All Meditations.
10. All Yogasanas.

GSS106

GOVERNANCE IN INDIA

3 0 0 3

Unit – I Constitution

9 hrs

Constitution of India – Objectives Enshrined in Preamble, Fundamental Rights & Duties, Directive Principles of State Policy – Union Executive, Legislative and Judiciary – State Governments – Federal Features and Unitary bias - Different types of Governments in the World.

Unit – II Legislature and Judiciary

8 hrs

Parliament – Lok Sabha and Rajya Sabha – Legislative Procedure – Union Judiciary – State Legislature – State Judiciary – Parliamentary Democracy

Unit – III Central political executive

9 hrs

Roles of President, Vice President, Prime Minister, Council of Ministers, Cabinet Committees – Role of Central Secretariat – Boards and Commissions – Ministries and Departments.

Unit – IV State administration

9 hrs

Roles of Governor, Chief Minister, Council of Ministers, State Secretariat – Administration of Law and Order – District Administration – Panchayat Raj – Municipal Administration – Autonomy of Local Bodies.

Unit – V E – Governance

10 hrs

Overview – E-governance Evolution – Global Trends – Models of Digital Governance – E-Readiness – Infrastructural needs – Evolutionary stages in E-governance – NICNET – CARD project – Computerization of Urban Local Bodies – E-governance in Secretariat – Land Records Management Software – IT in Indian Judiciary – Rural e-seva.

TOTAL: 45 Hrs

TEXT BOOKS

1. Vishnoo Bhagwan and Vidya Bhushan, “Indian Administration”, S-Chand & Co., 2005.
2. C.S.R. Prabhu, “E-Governance - Concepts and Case Studies”, Prentice-Hall of India, 2005.
(for Unit-V only)

REFERENCES

1. M. Laxmikanth, ‘Public Administration’, 5th edition, 2009.
2. www.india.gov.in, National portal of India.
3. Kiran Bedi and others, “Government @ net”, Sage Publications, New Delhi 2001.
4. www.nisg.org, ‘Architecting e-government’ website of National Institute of Smart Government.

Unit - I Information Theory, Models & Coding 7 hrs

Entropy – Definition - Properties - Joint and Conditional Entropy - Information Sources - Models – Probability Models - Markov Models - Coding – Uniquely Decidable Codes - Prefix Codes

Unit - II Huffman Coding 8 hrs

Basic Idea - Minimum Variance Huffman Codes - Optimality of Huffman Codes - Length of Huffman Codes - Extended Huffman Codes - Adaptive Huffman Coding - Golomb Codes - Rice Codes - Applications of Huffman Coding – Lossless Image Compression - Text Compression - Audio Compression.

Unit III Arithmetic Coding 12 hrs

Generation and Deciphering a Tag - Generation of a Binary Code - Comparison of Huffman and Arithmetic Coding - Adaptive Arithmetic Coding - Applications of Arithmetic Coding

Dictionary Techniques: Static Dictionary - Adaptive Dictionary – Lempel Ziv Approaches; Applications in File Compression - Image Compression – Graphic Interchange Format (GIF) - Portable Network Graphics (PNG) Format - Compression over Modems.

Unit - IV Scalar & Vector Quantization 9 hrs

Uniform Quantizer - Adaptive Quantizer – Forward adaptive - Backward adaptive - Jayant Quantizer - Non-Uniform Quantization - Entropy Coded Quantization - Concept of Vector Quantization - Advantages of Vector Quantization over Scalar Quantization - Linde-Buzo-Gray (LBG) algorithm - Application of LBG Algorithm to Image Compression

Unit V Transform Coding 9 hrs

Necessity of transforms - DCT – DWT - Quantization and Coding of Transform Coefficients - JPEG Image Compression - Application in Audio Compression – Modified Discrete Cosine Transform (MDCT).

TOTAL : 45 Hrs

TEXT BOOK

1. Khalid Sayood, “Introduction to Data Compression”, Elsevier publication, Third edition, 2010.

REFERENCES

1. Graham Wade, “Coding Techniques – Introduction to compression & Error control”, Palgrave Publications, 2000.
2. Salomon D, “Data compression – Complete reference”, Springer-Verlag, Third edition, 2004.
3. Nelson Mark, et al., “Data Compression book”, BPB publication, Second edition, 2005

Unit - I General Overview of the System 9 hrs

History – System Structure – User perspective – Operating System Services – Assumptions about Hardware - Introduction to the Kernel: Architecture of the UNIX Operating System – Introduction to System Concepts – Kernel Data Structures – System Administration – Summary and Preview.

Unit - II Buffer Cache 9 hrs

Buffer Headers – Structure of the Buffer Pool – Advantages and Disadvantages of the Buffer Cache - Internal Representation of Files: Inodes – Structure of a Regular File – Directories – Conversion of a Path Name to an Inode – Super Block – Other File Types.

Unit - III System Calls for File System 9 hrs

Open – Read – Write – File and Record Locking – Adjusting the Position of File I/O – LSEEK – Close – File creation – Creation of Special Files – Pipes – Dup – Mounting and Unmounting File Systems.

Unit - IV Structure of Processes 9 hrs

Process States and Transitions – Layout of System Memory – The Context of a Process – Saving the Context of a Process. Process Control: Process Creation – Signals – Process Termination – Awaiting Process Termination – Invoking other Programs – The Shell – System Boot and the INIT Process.

Unit - V Process Scheduling and Memory Management Policies 9 hrs

Process Scheduling – Memory Management Policies: Swapping – A Hybrid System with Swapping and Demand Paging. The I/O Subsystem: Driver Interfaces– Disk Drivers-Terminal Drivers.

TOTAL : 45 Hrs

TEXT BOOK

1. Maurice J. Bach, “The Design of the Unix Operating System”, Prentice Hall of India, 2004.

REFERENCE

1. Vahalia, “UNIX Internals: The New Frontiers”, Pearson Education Inc, 2003.

Unit I**9L + 3T hrs**

Web Essentials: Clients, Servers, and Communication. The Internet - Basic Internet Protocols -The World Wide Web - HTTP request message - response message - Web Clients - Web Servers - Markup Languages: XHTML. An Introduction to HTML – History –Versions -Basic XHTML Syntax and Semantics - Fundamentals of HTML

Style Sheets: CSS - Introduction to Cascading Style Sheets – Features - Core Syntax - Style Sheets and HTML - Cascading and Inheritance - Text Properties - Positioning

Unit II**9L + 3T hrs**

Client-Side Programming: Introduction to JavaScript – Functions – Objects – Arrays – Built - in Objects - JavaScript Debuggers.

Host Objects: Browsers and the DOM - Introduction to the Document Object Model DOM History and Levels - Intrinsic Event Handling - Modifying Element Style - The Document Tree -DOM Event Handling

Unit III**9L + 3T hrs**

Representing Web Data: XML - Documents and Vocabularies - Versions and Declaration - Namespaces JavaScript and XML: Ajax-DOM based XML processing.

Selecting XML Data: XPATH - Template based Transformations: XSLT - Displaying XML Documents in Browsers.

Unit IV**9L + 3T hrs**

Java Server Faces Web Applications: Introduction – Java Web Technologies – Creating and running simple application- JSF components -Session Tracking.

Java Web Services: Basics- Creating, Publishing and Consuming Web Services - Session Tracking in Web Services

Unit V**9L + 3T hrs**

Web Servers (IIS and APACHE)-ASP.NET 2.0: Simple Web Form Creation – Web Controls-Session Tracking

LECTURE: 45**TUTORIAL : 15****TOTAL : 60 Hrs****TEXT BOOK**

1. Jeffrey C.Jackson, "Web Technologies-A Computer Science Perspective", Pearson Education, 2006. (Unit 1,2,3)
2. H.M.Deitel, P.J. Deitel , et.al "Internet & World Wide Web - How To Program", Pearson Education, Fourth Edition, 2008. (Unit 4,5)

REFERENCES

1. <http://www.w3schools.com>
2. Robert. W. Sebesta, "Programming the World Wide Web", Pearson Education, Fourth edition, 2007
3. Marty Hall and Larry Brown, "Core Web Programming", Pearson Education, 2001.

ITY117

DATA WAREHOUSING AND DATA MINING

3 0 0 3

Unit - I

9 hrs

Introduction to Data Warehouse - Multidimensional Data Model - Data Warehouse Architecture - Implementation - Data Warehousing to Data Mining - Efficient Methods for Data Cube Computation

Unit - II

9 hrs

Data Mining – Definition- Motivation – Importance - Kinds of Data – Functionalities –Preprocessing- Cleaning – Integration – Transformation – Reduction - Discretization - Concept Hierarchy Generation

Unit - III

9 hrs

Basic Concepts and a Road Map - Efficient and Scalable Frequent Item Set Mining Methods - Mining Various Kinds of Association Rules - from Association Mining to Correlation Analysis – Classification – Prediction – Issues regarding Classification and Prediction - Bayesian Classification - Rule Based Classification – Classification by Neural Network Back Propagation – Prediction.

Unit - IV

9 hrs

Cluster Analysis - Types of Data in Cluster Analysis - A Categorization of Major Clustering Methods- Partitioning Methods - Hierarchical Methods - Density Based Methods - Grid Based Methods - Model Based Clustering Methods - Outlier Analysis - Mining Data Streams - Mining Time Series Data - Mining Sequence Patterns in Transactional Databases.

Unit - V

9 hrs

Spatial Data Mining - Multimedia Data Mining - Text Mining - Mining World Wide Web - Data Mining Applications - Data Mining Systems Products and Research Prototypes - Social Impacts of Data Mining - Trends in Data Mining

TOTAL : 45 Hrs

TEXT BOOK

1. J. Han, M. Kamber, “Data Mining: Concepts and Techniques”, Second edition, Harcourt India / Morgan Kauffman Publisher, 2006.

REFERENCES

1. Margaret H.Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson Education, 2004.
2. Sam Anahory and Dennis Murry, “Data Warehousing in the real world”, Pearson Education, 2003.
3. David Hand, Heikki Manila and Padhraic Symth, “Principles of Data Mining”, PHI, 2004.
4. W.H.Inmon, “Building the Data Warehouse”, Third edition, Wiley, 2003.
5. Alex Bezon and Stephen J.Smith, “Data Warehousing, Data Mining & OLAP”, McGraw-Hill edition, 2001.
6. Paulraj Ponniah, “Data Warehousing Fundamentals”, Wiley-Interscience Publication, 2003.

1. Compress a binary file using RL encoding. (Lossless Data Compression)
2. Compress a text file using Adaptive Huffman Coding. (Lossless Data Compression)
3. Compress a text file using Golomb Coding. (Lossless Data Compression)
4. Compress a text file using Rice Coding. (Lossless Data Compression)
5. Compress a text file using Lempel Ziv Coding. (Lossless Data Compression)
6. Compress an image using LBG (Linde-Buzo-Gray) algorithm.
7. Perform Zig-Zag ordering for AC & DC Coefficients.
8. Perform DCT on a given image.
9. Convert DCT values into corresponding (x,y) coordinate values.
10. Compress an uncompressed audio file using Modified Discrete Cosine Transform.

1. Implement the algorithm for the computation of sparse and iceberg cubes.
2. Implement the algorithm to compute the shell fragments for the given base cuboid.
3. Implement the FP-Growth algorithm.
4. Implement the algorithm to generate a decision tree from the training tuples of a partition D.
5. Develop an application to extract association mining rules.
6. Develop an application for implementing one of the clustering techniques.
7. Implement back propagation algorithm.
8. Implement the bagging algorithm to create an ensemble of models for a learning scheme.
9. Develop an application for implementing Naïve Bayes classifier
10. Implement Apriori approach.

1. Basic Commands for UNIX file system.
2. Shell Programs
 - i. Armstrong Number Generation
 - ii. Number of digits in the given Number
 - iii. Message Printing
 - iv. Appending a file
 - v. Arithmetic operations
 - vi. Search and replace a character in a file
3. Implement Producer-consumer using shared memory
4. Implement Producer-consumer using semaphores
5. Implement Parent child process
6. Implement Reader Writer problem
7. Implement Message queue
8. Command interpreter
9. Implement FCFS Scheduling algorithm
10. Paging and Segmentation
11. File operations

1. Create a web site using web development tool
2. Create a web page with all types of Cascading style sheets.
3. Client Side Scripts for Validating Web Form Controls using JavaScript
4. Client side scripting for roll over image and random image display using JavaScript
5. Program using XML Schema (2 programs)
6. Program using XSLT/XSL
7. Program using JSF(2 programs)
8. Program to develop web services in java and consume it using an application(2 programs)
9. Program for ASP.NET using web controls.

Unit - I Introduction**8L + 3T hrs**

Simulation of a Pure-Pursuit Problem – A System and its Model – Simulation of Inventory Problem - When to Simulate

Unit - II Simulation of Continuous Systems**9L + 3T hrs**

A Chemical Reactor – Numerical Integration for Continuous System Simulation – Selection of an Integration Formula – Runge-Kutta Integration Formulas – Simulation of a Servo system – Simulation of a Water Reservoir System – Analog vs. Digital Simulation.

Unit - III Discrete System Simulation**13L + 3T hrs**

Fixed Time-Step vs. Event-to-Event Model – Randomness in Input signals– Generation of Random Numbers – Monte-Carlo Computation / Stochastic Simulation - Elements of Inventory Theory – Inventory Models – Generation of Poisson and Erlang variates – Simulation of Example Problems – Forecasting and Regression Analysis

Unit - IV Queuing Systems**6L + 3T hrs**

Queuing Theory – Simulation of Single-Server Queue and Two-Server Queues – Simulation of More General Queues

Unit - V Design and Evaluation of Simulation Experiments**9L + 3T hrs**

Length of Simulation Runs – Variance Reduction Techniques – Experimental Layout – Validation

LECTURE: 45 Hrs TUTORIALS: 15 Hrs**TOTAL : 60 Hrs****TEXT BOOK**

1. Narsingh Deo, “System Simulation with Digital Computer”, Prentice Hall, India, 2008

REFERENCES

1. Geoffrey Gordon, “System Simulation”, Second Edition, Prentice Hall, India, 2006.
2. Jerry Banks, et al., “Discrete –Event System Simulation”, Fourth edition, Pearson Education, 2007.

MAT111

GRAPH THEORY

3 1 0 4

Unit - I Introduction

9L + 3T hrs

Graphs – Introduction – Isomorphism – Sub graphs – Walks, Paths, Circuits – Connectedness – Components – Euler Graphs – Hamiltonian Paths and Circuits - Digraph.

Unit - II Trees

9L + 3T hrs

Trees – Properties of trees – Distance and Centers in Tree – Rooted and Binary Trees- Traversals of binary tree – Expression tree.

Unit - III Colouring and Planar Graphs

9L + 3T hrs

Vertex colouring and Chromatic Number – Structure of k-chromatic graphs – Four colour problem - Planar graphs.

Unit - IV Matrix Representation

9L + 3T hrs

Incidence matrix – Submatrices – Circuit matrix – Path matrix – Adjacency matrix – Properties of all matrices

Unit - V Algorithms

9L + 3T hrs

Spanning tree - Spanning trees in a weighted graph - Finding all spanning trees of a graph – Shortest path algorithm – Networks and maximum flow problems

LECTURE: 45 Hrs TUTORIAL : 15 Hrs

TOTAL: 60 Hrs

TEXT BOOKS

1. Narsingh Deo, “Graph Theory”, Prentice Hall of India. Revised edition, 2004.
2. Douglas B. West, “Introduction to graph theory”, 2nd Edition, Prentice Hall of India. 2002.

REFERENCES

1. R. J. Wilson, “Introduction to graph theory”, 4th Edition, Pearson Education, 2003.
2. Bela Bollobas, “Modern Graph Theory”, Springer Verlag, July, 1998.
3. Reinhard Diestel, “Graph Theory”, 2nd Edition, Springer – Verlag, 2000

Unit - I Partial Differential Equations

9 hrs

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions - Solution of standard types of first order partial differential equations (excluding reducible to standard types) – Lagrange’s linear equation – Linear homogeneous partial differential equations of second and higher order with constant coefficients

Unit - II Canonical Forms

9 hrs

Classification of second order quasi linear partial differential equations- Characteristics-Canonical forms: hyperbolic equations-parabolic equations- elliptic equations.

Unit - III Boundary Value Problem

9 hrs

Solution of PDE’s by method of separation of variables- Steady state solution of two-dimensional heat equation (Insulated edges excluded) – Fourier series solution –Rectangular, circular and semicircular plates.

Unit - IV Laplace Transform Method

9 hrs

Introduction- Transform of unit step function – Solution of PDE’s: solution of diffusion equation and wave equation.- simple problems.

Unit - V Fourier Transform Method

9 hrs

Introduction - Solution of PDE’s: solution of diffusion equation and Laplace equation-simple problems.

LECTURE: 45 Hrs TUTORIAL : 15 Hrs

TOTAL : 60 Hrs

TEXT BOOKS

1. K. Sankara Rao, Introduction to partial differential equations, Prentice Hall of India, New Delhi(2006).
2. Veerarajan T., “Engineering Mathematics” (for semester III), Third Edition, Tata McGraw Hill, New Delhi (2007)

REFERENCES

1. Grewal B.S., “Higher Engineering Mathematics”, Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.
5. Kandasamy P., Thilagavathy K. and Gunavathy K., “Engineering Mathematics Volume III”, S.Chand & Company Ltd., New Delhi, 1996.
6. Ian Sneddon, “Elements of partial differential equations”, McGraw – Hill New Delhi, 2003.
7. Arunachalam T., “Engineering Mathematics III”, Sri Vignesh Publications, Coimbatore. (Third Edition), 2010.

CSE129

THEORY OF PROGRAMMING LANGUAGES

3 0 0 3

Unit - I

9 hrs

The Study Programming Languages – Need to Study Programming Languages – History of Programming Languages – Role of Programming Languages – Programming Environments – **Impact of Machine Architecture** – The Operation of a Computer – Virtual Computers and Binding Times – **Language Translation Issues** – Programming Language Syntax – Stages in Translation.

Unit - II

9 hrs

Elementary Data Types – Properties of Types and Objects – Scalar Data Types – Composite Data Types – **Encapsulation** - Structured Data Types – Abstract Data Types – Encapsulation by Subprograms – Type Definitions.

Unit - III

9 hrs

Inheritance – Inheritance – Polymorphism – **Sequence Control** – Implicit and Explicit Sequence Control – Sequencing with Arithmetic Expressions – Sequence Control Between Statements – Sequencing with Non arithmetic Expressions.

Unit - IV

9 hrs

Subprogram Control – Subprogram Sequence Control – Attributes of Data Control – Parameter Transmission – Explicit Common Environments.

Unit - V

9 hrs

Distributed Processing – Variations on Subprogram Control - Parallel Programming – Hardware Developments – Software Architecture

TOTAL : 45 Hrs

TEXT BOOK

1. Terrence W. Pratt and Marvin V. Zelkowitz, “Programming Languages - Design and Implementation”, Fourth edition, Pearson Education Asia, 2001.

REFERENCES

1. Robert W. Sebesta, “Concepts of Programming Languages”, Fourth edition, Addison-Wesley, 1999.
2. Ravi Sethi, “Programming Languages – Concepts and Constructs”, Second edition, Pearson Education Asia, 1996.

Unit - I High Performance Networks**9 hrs**

Frame Relay Networks – Asynchronous Transfer Mode – Asynchronous Transfer Mode (ATM) Protocol Architecture - ATM Logical Connection - ATM Cell – ATM Service Categories – ATM Adaptation Layer (AAL) - High Speed LANs: Fast Ethernet - Gigabit Ethernet - Fibre Channel.

Unit - II Queuing Models and Congestion Management**8 hrs**

Queuing Analysis- Queuing Models – Single Server Queues – Effects of Congestion – Congestion Control – Traffic Management – Congestion Control in Packet Switching Networks

Unit - III ATM Congestion Control**12 hrs**

Performance of TCP over ATM - Traffic and Congestion control in ATM – Requirements – Attributes – Traffic Management Frame Work - Traffic Control – Available Bit Rate (ABR) Traffic Management – ABR Rate Control - Resource Management (RM) Cell Formats - ABR Capacity Allocations.

Unit - IV Integrated and Differentiated Services**8 hrs**

Integrated Services Architecture – Approach - Components - Services - Queuing Discipline - Fair Admission Control - Traffic Shaping - Resource Reservation
Queuing (FQ) - Processor Sharing (PS) - Bit-Round Fair Queuing (BRFQ) - Generalized Processor Sharing (GPS) - Weighted Fair Queuing (WFQ) – Random Early Detection - Differentiated Services
DS code points – Per Hop Behavior

Unit - V Protocols for QOS Support**8 hrs**

Resource Reservation (RSVP) – Goals & Characteristics - Data Flow - RSVP operations - Protocol Mechanisms – Multiprotocol Label Switching – Operations - Label Stacking - Protocol details – Real Time Protocol (RTP) – Protocol Architecture - Data Transfer Protocol - Real Time Control Protocol (RTCP).

TOTAL: 45 Hrs**TEXTBOOK**

1. William Stallings, “High Speed Networks and Internet”, Pearson Education, Second Edition, 2002.

REFERENCES

1. Warland & Pravin Varaiya, “High Performance Communication Networks”, Jean Harcourt Asia Pvt. Ltd., Second edition, 2001.
2. Irvan Pepelnjk, Jim Guichard and Jeff Apcar, “MPLS and VPN architecture”, Cisco Press, Volume 1 and 2, 2003.

Unit - I Introduction 9 hrs

Role of XML – XML and the Web – XML Language Basics – SOAP – Web Services – Revolutions of XML – Service Oriented Architecture (SOA).

Unit - II XML Technology 9 hrs

XML – Name Spaces – Structuring with Schemas and DTD – Presentation Techniques – Transformation

Unit III SOAP 9 hrs

Overview of SOAP – HTTP – XML - RPC – SOAP: Protocol – Message Structure – Intermediaries – Actors – Design Patterns and Faults – SOAP with Attachments.

Unit - IV Web Services 9 hrs

Overview – Architecture – Key Technologies - UDDI – WSDL – ebXML – SOAP and Web Services in E-Com – Overview of .NET and J2EE.

Unit - V XML Security 9 hrs

Security Overview – Canonicalization – XML Security Framework – XML Encryption – XML Digital Signature – XKMS Structure – Guidelines for Signing XML Documents – XML in Practice

TOTAL : 45 Hrs

TEXT BOOK

1. Frank. P. Coyle, “XML, Web Services and the Data Revolution”, Pearson Education, 2002.

REFERENCES

1. Ramesh Nagappan , Robert Skoczylas et al., “ Developing Java Web Services”, Wiley Publishing Inc., 2004.
2. Sandeep Chatterjee, James Webber, “Developing Enterprise Web Services”, Pearson Education, 2004.
3. McGovern, et al., “Java Web Services Architecture”, Morgan Kaufmann Publishers, 2005.

Unit - I Introduction**9 hrs**

Characteristics of Wireless Channel - Wireless Local Loop - IEEE 802.16 Standard – HIPERACCESS - Ad hoc Wireless Networks: Introduction and Issues - MAC Protocols: Design Issues - Goals and Classification.

Unit - II Routing Protocols**9 hrs**

Design Issues – Classification – DSDV – WRP - Location Aided Routing - Zone Routing Protocol - Hierarchical State Routing Protocol - Power Aware Routing Protocol - Associativity based Multicast Routing Protocol - Multicast AODV - On demand Multicast Routing Protocol.

Unit - III Security in Adhoc Networks**9 hrs**

Security in Adhoc Wireless Networks – Network Security Requirements - Issues and Challenges in Security Provisioning – Network Security Attacks – Key Management – Secure Routing in Adhoc Networks.

Unit - IV Energy Management**9 hrs**

Need - Classification of Battery Management Schemes - Transmission Power Management Schemes - System Power Management Schemes.

Unit - V Wireless Sensor Networks**9 hrs**

Architecture - Data Dissemination - Data Gathering - MAC Protocols - Location Discovery - Quality of Sensor Networks

TOTAL : 45 Hrs**TEXT BOOK**

1. C.Siva Ram Murthy and B.S.Manoj, “Adhoc Wireless Networks: Architectures and Protocols”, Prentice Hall PTR, 2004.

REFERENCES

1. C.-K.Toh, “Adhoc Mobile Wireless Networks: Protocols And Systems”, Prentice Hall PTR, 2001
2. Mohammad Ilyas, “The Handbook Of Adhoc Wireless Networks”, CRC press, 2002
3. Charles E. Perkins, “Adhoc Networking”, Addison –Wesley, 2000
4. Stefano Basagni , Marco Conti, et al, “Mobile Adhoc Networking”, Wiley –IEEE press, 2004
5. Zhao and Guibas, ”Wireless Sensor Networks”, Morgan Kaufmann Publications, 2004

ITY121

DISTRIBUTED SYSTEMS

3 0 0 3

Unit - I Introduction

7 hrs

Definition of Distributed System – Goals – Types of Distributed Systems - Architectural Styles – System Architectures – Architectures versus Middleware

Unit - II Processes and Naming

10 hrs

Threads – Virtualization – Clients – Servers – Code Migration – Names - Identifiers and Addresses – Flat Naming – Structured Naming – Attribute-based Naming.

Unit - III Communication

9 hrs

Fundamentals – Remote Procedure Call – Message-Oriented Communication – Stream-Oriented Communication – Multicast Communication

Unit - IV Synchronization, Consistency and Replication

11 hrs

Clock Synchronization – Logical Clocks – Mutual Exclusion – Global Positioning of Nodes – Election Algorithms – Data-centric Consistency Models – Client-centric Consistency Models – Replica Management – Consistency Protocols.

Unit - V Distributed File Systems

8 hrs

Architecture – Processes – Communication – Naming – Synchronization – Consistency and Replication – Fault Tolerance – Security

TOTAL : 45 Hrs

TEXT BOOK

1. Andrew S. Tanenbaum and Maarten Van Steen, “Distributed Systems Principles and Paradigms”, Second edition, Pearson Education, 2007.

REFERENCES

1. George Coulouris, Jean Dollimore and Tim Kingberg, “Distributed System Concepts and Design”, Fourth edition, Pearson Education Asia, 2009.
2. M. Tamer Ozsu, Patrick Valduricz and S. Sridhar, “Principles of Distributed Database Systems”, Pearson Education, 2006.

3 0 0 3

9 hrs

Introducing SOA – The Evolution of SOA

9 hrs

Web Services and Primitive SOA - Web Services and Contemporary SOA: Activity Management and Composition - Advanced Messaging.

9 hrs

Web Services and Contemporary SOA: Metadata and Security - SOA and Service-Oriented: Principles of Service-Oriented – Service Layers - Building: SOA Delivery Strategies.

9 hrs

Service-Oriented Analysis: Introduction - Service Modeling – Service-Oriented Design: Introduction – SOA Composition Guidelines.

9 hrs

Service-Oriented Design: Service Design – Business Process Design – Fundamentals WS -* Extensions
- UDDI – Direct/Mediated Web Services - CAF (Composite Application Framework)

TOTAL : 45 Hrs

TEXT BOOK

1. Thomas Erl, “Service-Oriented Architecture Concepts, Technology and Design”, Pearson Education, 2007.

REFERENCES

1. Eric Newcomer Greg Lomow, “Understanding SOA with Web Services”, Pearson Education, 2005.
2. Thomas Erl, “SOA Principles of service Design”, Pearson Education, 2007.
3. Thomas Erl, “SOA Design Patterns”, Pearson Education, 2008.

Unit - I Grid Computing Technology – An Overview**9 hrs**

Introduction – High-Performance Computing – Cluster Computing – Peer-to-Peer Computing – Internet Computing – Grid computing – Grid computing model – Grid Protocols – Types of Grids – Grid Networks – Grid Applications characteristics – Application Integration – Grid Computing and Public Policy

Unit - II Grid Computing and Grid Computing Initiatives**9 hrs**

Early grid activities – Current Grid Activities – Grid Business areas – Grid applications – Grid Infrastructure - Grid Computing Organizations and their roles – Grid Computing anatomy – Grid Computing road map.

Unit – III Grid Computing Applications and Technologies**9 hrs**

Merging the Grid Services Architecture with the Web Services Architecture - OGSA – Sample use cases – OGSA platform components – OGSI – OGSA Basic Services

Unit - IV Grid Computing Tool Kits**9 hrs**

Globus GT 3 Toolkit – Architecture, Programming model, High level services – OGSI .Net middleware Solutions.

Unit - V Cloud Computing**9 hrs**

Understanding Cloud Computing – Cloud Computing for Everyone: Cloud computing for the family, community and corporation.

TOTAL : 45 Hrs**TEXT BOOKS**

1. Ahmar Abbas, “Grid Computing: A Practical Guide to technology and Applications”, Firewall Media, 2008 Edition. (Unit – I)
2. Joshy Joseph & Craig Fellenstein, “Grid Computing”, Pearson Education, 2004. (Units–II,III and IV)
3. Michael Miller, “Cloud Computing – Web-Based Applications that Change the way you work and collaborate Online”, Pearson Education, 2009. (Unit V)

Unit - I Introduction and Pram Algorithms**8 hrs**

Parallel Processing Terminology - The Sieve of Eratosthenes - Model of Serial Computation - PRAM Model of Parallel Computation - PRAM algorithms - Reducing Number of Processors.

Unit - II Processor Arrays, Multiprocessors, Multicomputers and Parallel Programming Languages**10 hrs**

Processor Organizations - Processor Arrays – Multiprocessors – Multicomputers - Flynn's Taxonomy – Speedup - Scaled Speedup and Parallelizability.
Programming Parallel Processes - FORTRAN 90- SEQUENT C - nCUBE C- OCCAM - C LINDA- Notation for Expressing Parallel Algorithms.

Unit - III Mapping and Scheduling, Elementary Parallel Algorithms**9 hrs**

Mapping Data to Processors - Dynamic Load Balancing on Multicomputers - Static Scheduling on UMA Multiprocessors – Deadlock - Classifying MIMD Algorithms – Reduction – Broadcast - Prefix Sums.

Unit - IV Sorting**9 hrs**

Enumeration Sort - Lower Bounds On Parallel Sorting - Odd Even Transposition Sort - Bitonic Merge - Quicksort Based Algorithms - Random Read and Random Write.

Unit - V Graph Algorithms and Combinatorial Search**9 hrs**

Searching a Graph - Connected Components - All Pairs Shortest Path - Single Source Shortest Path - Minimum Cost Spanning Tree - Divide And Conquer - Branch and Bound - Parallel Branch and Bound Algorithms - Alpha Beta Search - Parallel Alpha Beta Search.

TOTAL : 45 Hrs**TEXT BOOK**

1. Michael J. Quinn, "Parallel computing-theory and practice", Second edition, Tata McGraw-Hill, 2002.

REFERENCES

1. Kai Hwang and Zhiwei Xu, "Scalable Parallel Computing", McGraw-Hill International Editions, 2000.
2. Kai Hwang and Fayer A.Briggs, "Computer architecture and Parallel processing", McGraw Hill, 1993.

CSE133

SEMANTIC WEB
(Pre-requisite : ITY116 - XML & Web Services)

3 0 0 3

Unit - I Introduction 8 hrs

History – Semantic Web Layers – Semantic Web technologies – Semantics in Semantic Web – Review of XML.

Unit - II RDF 10 hrs

RDF and Semantic Web – Basic Ideas - RDF Specification – RDF Syntax: XML and Non- XML - RDF Elements – RDF Relationship: Reification - Container and collaboration – RDF Schema – Editing - Parsing and Browsing RDF/XML-RQL-RDQL.

Unit - III Ontology 10 hrs

Why Ontology – Ontology movement – OWL – OWL Specification - OWL Elements – OWL constructs: Simple and Complex – Ontology Engineering: Introduction – Constructing Ontologies – Reusing Ontologies – On-to-Knowledge Semantic Web Architecture.

Unit - IV Logic and Inference 9 hrs

Logic – Description Logics - Rules – Monotonic Rules: Syntax, Semantics and Examples – Non-Monotonic Rules – Motivation Syntax and Examples – Rule Markup in XML: Monotonic Rules and Non-Monotonic Rules.

Unit - V Applications of Semantic Web Technologies 8 hrs

RDF Uses: Commercial and Non-Commercial use – Sample Ontology – e-Learning – Web Services – Web mining – Horizontal information – Data Integration – Future of Semantic Web

TOTAL : 45 Hrs

TEXT BOOK

1. Grigorous Antoniou and Van Hermelen, “A Semantic Web Primer”, MIT Press, 2004.

REFERENCES

1. Gobinda G. Chowdhury, “Spinning the Semantic Web: Bringing the World Wide Web to its full potential”, MIT Press, 2004.
2. Shelley Powers, “Practical RDF”, O’reilly publishers, First Indian Reprint, 2003.

Unit - I Introduction**6 hrs**

Knowledge in Speech and Language Processing – Ambiguity – Models and Algorithms – Language, Thought and Understanding

Regular Expressions – Finite-State Automata - Morphology and Finite-State Transducers: Survey of English Morphology – Finite-State Morphological Parsing – Combining FST Lexicon and Rules – Lexicon-Free FSTs: The Porter Stammer – Human Morphological Processing.

Unit - II Syntax**10 hrs**

Word Classes and Part-of-Speech Tagging: English Word Classes – Tagsets for English – Part-of-Speech Tagging – Rule-Based Part-of-Speech Tagging – Stochastic Part-of-Speech Tagging – Transformation-Based Tagging – Other issues. Context-Free Grammars for English: Constituency – Context-Free Rules and Trees – Sentence-Level Constructions – The Noun Phrase – Coordination – Agreement – The Verb Phrase and Sub Categorization – Auxiliaries – Spoken Language Syntax – Grammars Equivalence and Normal Form – Finite-State and Context-Free Grammars – Grammars and Human Processing. Parsing with Context-Free Grammars: Parsing as Search – A Basic Top-Down Parser – Problems with the Basic Top-Down Parser – The Early Algorithm – Finite-State Parsing Methods

Unit - III Advanced Features**11 hrs**

Feature Structures – Unification of Feature Structures – Features Structures in the Grammar – Implementing Unification – Parsing with Unification Constraints – Types and Inheritance - Lexicalized and Probabilistic Parsing: Probabilistic Context-Free Grammar – Problems with PCFGs – Probabilistic Lexicalized CFGs – Dependency Grammars – Human Parsing.

Unit - IV Semantics**10 hrs**

Representing Meaning: Computational Desiderata for Representations – Meaning Structure of Language – First Order Predicate Calculus – Some Linguistically Relevant Concepts – Related Representational Approaches – Alternative Approaches to Meaning - Semantic Analysis: Syntax-Driven Semantic Analysis – Attachments for a Fragment of English – Integrating Semantic Analysis into the Earley Parser – Idioms and Compositionality – Robust Semantic Analysis. Lexical Semantics: Relational among Lexemes and their Senses – WordNet: A Database of Lexical Relations – The Internal Structure of Words – Creativity and the Lexicon.

Unit - V Applications**8 hrs**

Word Sense Disambiguation and Information Retrieval: Selectional Restriction-Based Disambiguation – Robust Word Sense Disambiguation – Information Retrieval. Natural Language Generation: Architecture for Generation – Surface Realization – Discourse Planning – other Issues. Machine Translation: Language Similarities and Differences – The Transfer Metaphor – The Interlingua Idea: Using Meaning – Direct Translation – Using Statistical Techniques – Usability and System Development.

TOTAL : 45

TEXT BOOK

1. Daniel Jurafsky & James H.Martin, "Speech and Language Processing", Second edition, Pearson Education (Singapore) P. Ltd., 2005.

REFERENCE

1. James Allen, "Natural Language Understanding", Pearson Education, 2003.

Unit - I**9 hrs**

Introduction to Electronic Commerce Framework - The Anatomy of E-Commerce Applications - The Network Infrastructure for E-Commerce - The Internet as a Network Infrastructure

Unit - II**9 hrs**

Client-Server Network Security – Firewalls – Data and Message Security – Challenge-Response System – E-Mail – Architectural Framework for E-Commerce – WWW – Hypertext Publishing – Security and the Web.

Unit - III**9 hrs**

Electronic Payment Systems – Inter Organizational Commerce and EDI - EDI Implementation and Value-added Networks.

Unit - IV**9 hrs**

The Corporate Digital Library - Dimensions of Internal Electronics Commerce Systems - Making a Business case for a Document Library - Types of Digital Documents - Issues behind Document Infrastructure - Corporate Data Warehouses - Documents Active / Compound Document Architecture.

Unit - V**9 hrs**

Advertising and Marketing on the Internet - Computer Based Education and Training - Technological Components of Education on-demand - Digital Copyrights and Electronic Commerce - Software Agents.

TOTAL : 45 Hrs**TEXT BOOK**

1. Kalakota & Whinston, “Frontiers of Electronic Commerce”, Pearson Education, 2008.

REFERENCES

1. Kamallesh K. Bajaj, “E-Commerce: The Cutting Edge & Business”, Tata McGraw-Hill, 2003.
2. Brenda Kennan, “Managing your E-Commerce Business”, PHI, 2001.
3. Bharat Bhaskar, “Electronic Commerce - Framework, Technology and Application”, TMH, 2003.
4. Effy Oz, “Foundations of E-Commerce”, PHI, 2001.
5. Jim A Carter, “Developing E-Commerce Systems”, PHI, 2001.

CSE136

SOFTWARE PROJECT MANAGEMENT

3 0 0 3

Unit - I

5 hrs

Software Project Management - An Overview of Project Planning - Programme Management and Project Evaluation

Unit - II

6 hrs

Selection of an Appropriate Project Approach – Software Effort Estimation - Activity Planning

Unit - III

13 hrs

Risk Management: Risk – Categories of Risk – A Framework for Dealing with Risk – Risk Identification – Risk Assessment – Risk Planning – Risk Management – Evaluating Risks to the Schedule – Monte Carlo Simulation – Critical Chain Concepts.

Resource Allocation: The Nature of Resources – Identifying Resource Requirements – Scheduling Resources – Creating Critical Paths - Publishing the Resource Schedule – Cost Schedules – The Scheduling Sequence.

Unit - IV

12 hrs

Monitoring and Control: Creating the Framework – Collecting the Data – Visualizing Progress – Cost Monitoring – Earned Value Analysis – Prioritizing Monitoring – Change Control

Managing Contracts: The Supply Process – Types of Contract – Stages in Contract Placement – Typical Terms of a Contract – Contract Management – Acceptance

Unit - V

9 hrs

Managing People and Organizing Teams - Software Quality– Practical Software Quality Measures – Product versus Process Quality Management – External Standards – Techniques to Help Enhance Software Quality – Quality Plans.

TOTAL : 45 Hrs

TEXT BOOK

1. Bob Hughes, Mike Cotterell, “Software Project Management” Tata McGraw Hill, Fourth Edition, 2008.

REFERENCES

1. Walker Royce, “Software Project Management– A Unified Framework “, Pearson Education, 2004.
2. Humphrey and Watts, “Managing the software process “, Addison Wesley, 1989.

CSE137

INFORMATION RETRIEVAL

3 0 0 3

Unit - I

9 hrs

Introduction: Definition - Objectives - Functional Overview - Relationship to DBMS - Digital Libraries and Data Warehouses - **Information Retrieval System Capabilities** - Search - Browse - Miscellaneous.

Unit - II

9 hrs

Cataloging and Indexing: Objectives - Indexing Process - Automatic Indexing - Information Extraction - **Data Structures:** Introduction - Stemming Algorithms - Inverted File Structures - N-Gram Data Structure - PAT Data Structure - Signature File Structure - Hypertext Data Structure.

Unit - III

9 hrs

Automatic Indexing: Classes of Automatic Indexing - Statistical Indexing - Natural Language - Concept Indexing - Hypertext Linkages

Document and Term Clustering: Introduction - Thesaurus Generation - Item Clustering - Hierarchy of Clusters.

Unit - IV

9 hrs

User Search Techniques: Search Statements and Binding - Similarity Measures and Ranking - Relevance Feedback - Selective Dissemination of Information Search - Weighted Searches of Boolean Systems - Searching the Internet and Hypertext - **Information Visualization:** Introduction - Cognition and Perception - Information Visualization Technologies.

Unit - V

9 hrs

Text Search Algorithms: Introduction - Software Text Search Algorithms - Hardware Text Search Systems.

Information System Evaluation: Introduction - Measures used in System Evaluation - Measurement Example – TREC Results.

TOTAL : 45 Hrs

TEXT BOOKS

1. Kowalski, Gerald, Mark T Maybury, “Information Storage and Retrieval Systems: Theory and Implementation”, Kluwer Academic Press, 2000.
2. Ricardo Baeza-Yates, “Modern Information Retrieval”, Pearson Education, 2007.

Unit - I**9 hrs**

Models, Theories and Frameworks: On the Effective Use and Reuse of HCI Knowledge – Systems – Interactions and Macro theory - Design in the MoRAS - Distributed Cognition: A New Foundation for Human-Computer Interaction.

Unit - II**9 hrs**

Usability Engineering Methods and Concepts: The Efficient Use of Complex Computer Systems - User Interface Evaluation: How Cognitive Models Can Help - HCI in the Global Knowledge-Based Economy - The Maturation of HCI: Moving Beyond Usability toward Holistic Interaction.

Unit - III**9 hrs**

User Interface Software and Tools: Past - Present and Future of User Interface Software Tools- Creating Creativity: User Interfaces for Supporting Innovation- Towards a Human-Centered Interaction Architecture.

Unit - IV**9 hrs**

Groupware and Cooperative Activity: Computer Mediated Communications: Past and Future - The Intellectual Challenge of CSCW: The Gap between Social Requirements and Technical Feasibility - Social Translucence: An Approach to Designing Systems that Support Social Processes - Transcending the Individual Human Mind: Creating Shared Understanding through Collaborative Design.

Unit - V**9 hrs**

Media and Information: Designing the User Interface for Multimodal Speech and Gesture Applications - Technologies of Information: HCI and the Digital Library - Intelligent Interfaces - Human-Computer Collaboration in Recommended Systems.

TOTAL : 45 Hrs**TEXT BOOK**

1. Carroll, J.M., “Human Computer Interaction in the New Millennium”, Prentice Hall, 2002.

REFERENCE

1. Jenny Preece, et al., “Human Computer Interaction”, Addison-Wesley Pub.Co., 1994.

Unit - I Introduction**9 hrs**

Overview – Problem and Scope – Biological Data Integration – Translating Specifications - Development Process – Evaluation

Unit - II Challenges in Integration of Biological Information**9 hrs**

Life Science Discovery Process – Nature of Biological Data – Data Sources in Life Science – Challenges in Information Integration.

Unit - III Data Management and Integration in Bioinformatics**9 hrs**

Data Management in Bioinformatics – Dimensions – Usecases – Strengths and Weakness in Various Approaches – Semantic Query Planning – Schema Management

Unit - IV Designing Biological Information Systems**9 hrs**

Legacy with Biological Data and Tools – Domain Evolution – Biological Queries – Query Processing – Visualization

Unit - V Integration Platform in Bioinformatics**9 hrs**

Integrating Flat File Databanks – XML Database – Relational Database – SRS Query Language – Linking Databanks – Object Loader – Scientific Analysis Tools

TOTAL : 45 Hrs**TEXT BOOK**

1. Zoe Lacroix and Terence Critchlow, “Bioinformatics - Managing Scientific Data”, Elsevier, 2003.

REFERENCES

1. Arthur M.Lesk, ”Introduction to Bioinformatics”, Oxford University press, India, 2005.
2. Attwood.T.K., et al., ” Introduction to Bioinformatics”, Pearson education, 1999.

Unit - I Fundamentals of Software Testing**9 hrs**

Introduction- Approaches to Testing - Testing during Development Life cycle - Requirement Traceability Matrix - Salient Features of Good Testing -Test Policy - Test Strategy - Test Planning – Testing Process & Number of Defects found in Testing - Test Team Efficiency - Mutation Testing - Challenges in Testing - Test Team Approach - Process Problems faced in Testing – Defect - Error/Mistake and Failures in Software - People Challenges in Software Testing.

Unit - II Risk Analysis**9 hrs**

Introduction - Advantage & Disadvantages of Automated Development System – Risk – Constraints - Project & Product Risks - Risks faced due to Software Development Systems - Software Implementation Risks - Risk Assessment - Handling of Risks - V Test Model - Defect Management.

Unit - III Software Quality**9 hrs**

Quality: Popular Views - Professional Views – Software Quality – Total Quality Management – Software Quality Metrics – In-process Quality Metrics – Metrics for Software Maintenance – Applying the Seven Basic Quality Tools in Software Development.

Unit - IV Software Quality**9 hrs**

Defect Removal Effectiveness – Rayleigh Model – Exponential Distribution and Reliability Models – Quality Management Models.

Unit - V Software Quality**9 hrs**

Availability metrics – Measuring and Analyzing customer satisfaction – Conducting In- process Quality Assessments – Audit and Assessment – Software Process Maturity Assessment – Software Project Assessment – Do's and Don'ts of Software Process Improvement.

TEXT BOOK

1. M.G. Limaye, “Software Testing – Principles, Techniques and Tools”, Tata McGraw Hill, 2009.
2. Stephen H. Khan, “Metrics and Models in Software Quality Engineering”, Pearson Education, second Edition, 2004.

REFERENCES

1. Watts S. Humphrey, “Managing The Software Process”, Addison Wesley, 1989.
2. William E. Perry, “Effective Methods for Software Testing”, John Wiley, Second Edition, 2000.

ITY122

INFORMATION SECURITY

3 0 0 3

Unit -I Introduction

9 hrs

History - What is Information Security? - Critical Characteristics of Information - NSTISSC Security Model - Components of an Information System - Securing the Components - Balancing Security and Access - The SDLC - The Security SDLC.

Unit - II Security Investigation

9 hrs

Need for Security - Business Needs - Threats – Attacks – Legal, Ethical and Professional Issues

Unit - III Security Analysis

9 hrs

Risk Management: Identifying and Assessing Risk - Assessing and Controlling Risk.

Unit - IV Logical Design

9 hrs

Blueprint for Security - Information Security Policy - Standards and Practices - ISO 17799/BS 7799 – NIST Models - VISA International Security Model - Design of Security Architecture - Planning for Continuity

Unit - V Physical Design

9 hrs

Security Technology – IDS - Scanning and Analysis Tools – Cryptography - Access Control Devices - Physical Security - Security and Personnel

TOTAL : 45 Hrs

TEXT BOOK

1. Michael E Whitman and Herbert J Mattord, “Principles of Information Security”, Thomson Publishing, India Edition, Second edition, 2007.

REFERENCES

1. Micki Krause, Harold F. Tipton, “Handbook of Information Security Management”, Vol. 1-3 CRC Press LLC, 2004.
2. Stuart Mc Clure, Joel Scrambray et al., “Hacking Exposed”, Tata McGraw- Hill, 2003.
3. Matt Bishop, “Computer Security Art and Science”, Pearson/PHI, 2002.