

ANNA UNIVERSITY OF TECHNOLOGY, COIMBATORE

CURRICULAM AND SYLLABI - REGULATIONS – 2007

M.SC. INFORMATION TECHNOLOGY (5 YEARS)

SEMESTER I

Course Code	Course Title	L	T	P	C
Theory					
073020001	Technical English I	4	0	0	4
073030008	Applied Mathematics I	3	1	0	4
073280001	Basics of Electrical Engineering	4	0	0	4
073230001	Computer Concepts & Problem Solving	4	0	0	4
073230021	Programming in C	3	1	0	4
Practical					
073280002	Electrical Engineering Laboratory	0	0	3	1.5
073230002	Computer Concepts and Problem Solving Laboratory	0	0	3	1.5
073230003	C Programming Laboratory	0	0	3	1.5
Total Credits					24.5

SEMESTER – II

Course Code	Course Title	L	T	P	C
Theory					
073020003	Technical English - II	3	0	0	3
073030003	Applied Mathematics - II	3	1	0	4
073230007	Digital Principles	4	0	0	4
073250001	Operating Systems	4	0	0	4
073230008	Data Structures	3	1	0	4
Practical					
073230009	Digital Laboratory	0	0	3	1.5
073250017	Operating Systems Lab	0	0	3	1.5
073230010	Data Structures Laboratory	0	0	3	2
Total Credits					24

SEMESTER – III

Course Code	Course Title	L	T	P	C
Theory					
073030004	Mathematical Structures	3	1	0	4
073250004	Design and Analysis of Algorithms	3	1	0	4
073250006	Object Oriented Programming	4	0	0	4
073250011	Database Management Systems	4	0	0	4
073250009	Computer Architecture	4	0	0	4
Practical					
073250010	Object Oriented Programming Laboratory	0	0	3	1.5
073250013	Database Management Systems Lab	0	0	3	2
073250008	Algorithms Design Laboratory	0	0	3	2
Total Credits					25.5

SEMESTER – IV

Course Code	Course Title	L	T	P	C
Theory					
073030010	Probability and Statistics	4	0	0	4
073230028	Microprocessors and Interfacing	3	1	0	4
073250018	Java Programming	3	1	0	4
073250019	Computer Networks	4	0	0	4
	Elective I	4	0	0	4
Practical					
073230025	Microprocessors and Interfacing Lab	0	0	3	1.5
073250021	Java Programming Laboratory	0	0	3	1.5
073250020	Computer Networks Laboratory	0	0	3	1.5
Total Credits					24.5

SEMESTER – V

Code No.	Course Title	L	T	P	C
Theory					
070250021	Software Engineering	3	1	0	4
073250027	Web Technology	4	0	0	4
073250028	Embedded Systems	3	1	0	4
	Elective – II	4	0	0	4
	Elective - III	4	0	0	4
Practical					
075250006	Software Lab	0	0	3	2
075250007	Web Technology Lab	0	0	3	2
075250008	Embedded Systems Lab	0	0	3	2
Total Credits					26

SEMESTER – VI

Code No.	Course Title	L	T	P	C
Theory					
075290003	Fundamentals of Digital Signal Processing	3	1	0	4
075230031	Unix Internals	4	0	0	4
075230034	TCP IP and Socket Programming	3	1	0	4
075290004	Mobile Communication	4	0	0	4
	Elective IV	4	0	0	4
Practical					
075250016	Unix Internals Lab	0	0	3	2
075250017	TCP/IP and Socket Programming Lab	0	0	3	2
Total Credits					24

SEMESTER – VII

Course Code	Course Title	L	T	P	C
075250018	Project Work - 1	0	0	24	12
Total Credits					12

SEMESTER – VIII

Course Code	Course Title	L	T	P	C
Theory					
075250019	Information Coding techniques	3	0	0	3
075250020	Network Security	3	1	0	4
075250021	Advanced Java Programming	3	1	0	4
	Elective V	3	0	0	3
	Elective VI	3	0	0	3
Practical					
075250027	Network Security Lab	0	0	3	2
075250022	Advanced Java Programming Lab	0	0	3	2
Total Credits					21

SEMESTER – IX

Course Code	Course Title	L	T	P	C
Theory					
073250033	Service Oriented Architecture	3	1	0	4
075250031	Enterprise Resource Planning	3	0	0	3
075230040	XML and Web Services	3	1	0	4
	Elective VII	3	0	0	3
	Elective VIII	3	0	0	3
Practical					
075250033	Service Oriented Architecture Lab	0	0	3	2
075250034	XML and Web Services Lab	0	0	3	2
Total Credits					21

SEMESTER – X

Course Code	Course Title	L	T	P	C
Theory					
	Project Work - II	0	0	24	12
Total credits					12

TOTAL CREDITS TO BE EARNED FOR THE AWARD OF THE DEGREE = 214.5

LIST OF ELECTIVES FOR M.Sc. - INFORMATION TECHNOLOGY (5 YEARS)

Course Code	Course Title	L	T	P	C
	SEMSTER IV				
073230053	Multimedia Systems	4	0	0	4
073250023	Client Server Computing	4	0	0	4
073250026	Principles of Management	4	0	0	4
073230044	Object Oriented Analysis and Design	4	0	0	4
	SEMESTER V				
073250032	Software Project Management	4	0	0	4
073250036	Data Warehousing	4	0	0	4
073250034	Signals and Systems	4	0	0	4
073250037	Wireless Technology	4	0	0	4
075250013	Professional Ethics	4	0	0	4
075250014	PC Testing and Troubleshooting	4	0	0	4
	SEMESTER VI				
075230033	Extreme Programming	4	0	0	4
075250015	Open Source Computing	4	0	0	4
075230035	Business Data Processing	4	0	0	4
075230036	Image Processing	4	0	0	4
	SEMESTER VIII				
075250023	Management Information Systems	3	0	0	3
075250028	Artificial Intelligence	3	0	0	3
075250024	Advanced DBMS	3	0	0	3
075250025	Distributed Operating Systems	3	0	0	3
075250026	Decision Support Systems	3	0	0	3
073230046	Internet Programming	3	0	0	3
	SEMESTER IX				
075230022	Compiler Design	3	0	0	3
075230021	Software Quality Assurance	3	0	0	3
075230044	Middleware Technologies	3	0	0	3
075230043	Architecture of Unix & Windows	3	0	0	3
075250039	Advanced Computer Architecture	3	0	0	3
075250040	Network Protocols	3	0	0	3

073020001

TECHNICAL ENGLISH - I

L	T	P	C
4	0	0	4

UNIT – I ENGLISH TODAY (12)

Modern English: varieties of discourse–regional variations–accent and dialects– social variations–occupational varieties and scientific English–medium and attitude; speaking and writing; formal and informal style–language change–new ways of studying English.

UNIT – II EXTENDING VOCABULARY: STRUCTURAL AND CONTENT WORDS (12)

Principles of word formation; abbreviations and acronyms; foreign words and phrases; idioms and phrases–everyday computer–related words; scientific and technical terms.

UNIT – III GRAMMAR (12)

Referring to people and things with the help of noun phrases- describing people and things with the help of determiners- adjectives and modifiers- making a messagevarying the message: negation question exclamation inversion – expressing words referring to time, place and manner- reporting what people say or think – combining messages: coordination and subordination- making text- the structure of information.

UNIT – IV RECEPTIVE SKILL 1–LISTENING (12)

Developing guided note taking from a lecture, recognizing and using descriptive words and phrases, completing information in a table, practicing dictation and checking spelling, developing accuracy in listening, imitating standard spoken English through native speakers’ talk and presentation, listening for general and specific information, listening to news in the media and relating information to issues and locales around the world.

UNIT – V RECEPTIVE SKILL 2–READING (12)

Predicting the content – skimming the text for gist- identifying the topic sentences – guessing the meaning of words from contexts – scanning for specific information – transfer of information – cloze reading.

Total : 60

REFERENCES:

1. Adrian Doff & Christopher Jones, “Language in use – intermediate”, Cambridge University Press, 2003.
2. Gail Ellis and Barbara Sinclair, “Learning to learn English: A course in learner training”, Cambridge University Press, 1989.

073030008

APPLIED MATHEMATICS - I

L	T	P	C
3	1	0	4

UNIT – I COMPLEX NUMBERS

(9)

Expansion of $\sin n\theta$ - $\cos n\theta$ in terms of $\sin \theta$ and $\cos \theta$ - Expansion of $\sin n\theta$; $\cos n\theta$ in terms of sines and cosines of multiples of θ , hyperbolic functions. Inverse hyperbolic functions.

UNIT – II MATRICES

(9)

Rank of matrix - consistency and inconsistency of a system of linear equations – Eigen values and Eigen vectors – Properties - Cayley Hamilton theorem – Reduction of Quadratic form to Canonical form by Orthogonal reduction.

UNIT – III DEFINITE INTEGRALS

(9)

Reduction formula for integral of $\sin nx$, $\cos nx$, $\tan nx$ – Definite integrals – Properties – Area of Cartesian Curves – volumes of Revolution.

UNIT – IV ORDINARY DIFFERENTIAL EQUATIONS

(9)

Solution of second order with constant coefficients and Variable coefficients - complimentary function – particular integrals – simultaneous linear equations with constant coefficients of first order.

UNIT – V APPLICATION OF DIFFERENTIATION

(9)

Curvature of a curve – Radius of a curvature in Cartesian form - Centre of curvature – Circle of curvature – Evolutes and Envelopes.

L:45 T:15 TOTAL:60

REFERENCES:

1. Veerarajan.T., “Engineering Mathematics”, TMH Pub. Co. Ltd., New Delhi 1999.
2. Kandasamy.P., Thilagavathy.K. and Gunavathy.K. – “Engineering Mathematics, Volume – I”, S.Chand & Co., New Delhi, 2001.

073280001

BASICS OF ELECTRICAL ENGINEERING

L	T	P	C
4	0	0	4

UNIT – I FUNDAMENTALS OF DC AND AC CIRCUITS (12)

Fundamentals of DC circuits: Ohm’s law, Kirchhoff’s law, Simple resistive circuits – Effect of series and parallel resistances – Mesh and Nodal analysis – Simple problems.

Fundamentals of AC circuits: RMS and Average values of sine wave, Form factor, Peak factor. Single phase AC circuits – Impedance - Power and Power Factor – Series RL,RC, RLC circuits - Simple problems

UNIT – II FUNDAMENTALS OF MAGNETIC CIRCUIT (12)

Ohm’s law of magnetic circuit, Simple and composite magnetic circuits, Effect of air gap – leakage factor – fringing effect – Simple problems. Faraday’s law of electromagnetic induction – Self and Mutually induced EMF – Statically and Dynamically induced EMF – Simple problems.

UNIT – III DC MACHINES AND TRANSFORMER (12)

DC Machine: Construction – EMF equation of DC generator – Types of Generators and Motors – Characteristics..

Transformer: Construction – EMF equation – Transformation ratio – Types of Single Phase Transformers.

UNIT – IV INDUCTION MACHINES (12)

Three phase Induction Motor: Construction, Types – Principle of Operation – Torque Equation – Slip Vs Torque Characteristics of Cage and wound rotor. Single Phase Induction Motor: Principle of Operation – Types – Applications.

UNIT – V POWER SUPPLIES (12)

Half and Full wave rectifier - Bridge rectifier - rectification efficiency – transformer utility factor -voltage regulator- introduction to SMPS and UPS.

TOTAL:60

REFERENCES:

1. B.L.Theraja, “Electrical Technology” - Vol I&II – Nirja construction and development company, New Delhi.
2. V.N.Mittle, “Basic Electrical Engineering”, Tata Mc.Graw Hill, New Delhi, 2006.
3. V. Del Toro, “Electrical Engineering Fundamentals”, PHI, NewDelhi, 1993.

073230001

COMPUTER CONCEPTS & PROBLEM SOLVING

L	T	P	C
4	0	0	4

UNIT – I FUNDAMENTALS OF COMPUTERS (12)

Evolution of Computers – Inputs/Outputs – Alternative Methods of Input – Organization of Modern Digital Computers – Operating System – Multitasking OS – Graphical User Interface.

UNIT – II WORD PROCESSING (12)

Word Processing Programs and Their Uses – Word Processor’s Interface – Editing Text – Formatting Text –Macro- Special Features of Word – Desktop Publishing Service – Converting doc into www pages

UNIT – III SPREADSHEET SOFTWARE (12)

Spreadsheet Programs – applications – Spreadsheet package features, attributes - structure, label, data, importing data, formula, functions – data handling – Managing workbooks.

UNIT – IV INTRODUCTION TO COMPUTER PROBLEM SOLVING (12)

Introduction – Problem Solving aspects-Top-Down Design-Implementation of Algorithms – Program Verification-Efficiency of Algorithms-Analysis of Algorithmfundamental algorithm-factorial computation-generation of Fibonacci sequence.

UNIT – V FACTORING AND ARRAY TECHNIQUES (12)

Factoring Methods-finding the square root of a number-generating prime numbers- Array techniques-array order reversal-Finding the maximum number in a set- Removal of duplicates from an ordered Array-finding the kth smallest element.

TOTAL:60

REFERENCES:

1. Peter Norton,“Introduction to Computers”,4th Edition, TMH Ltd, New Delhi, 2001.
2. R.G. Dromey, ”How to solve it by Computers”, Pearson Publishers, New Delhi, 2007.

073230021

PROGRAMMING IN C

L	T	P	C
3	1	0	4

UNIT – I INTRODUCTION TO C LANGUAGE (9)

Overview of ‘C’ language – Constants, Variables and Data Types – Operators, Expressions and Assignment statements – Managing Input/Output Operations – Formatted I/O – Decision Making - Branching – IF, Nested IF – Switch – go to - Looping- While, do, for statements.

UNIT – II ARRAYS AND FUNCTIONS (9)

Arrays – dynamic and multi-dimensional arrays - Character arrays and Strings – String handling Functions - User defined Functions – Categories of Functions – Recursion.

UNIT – III STRUCTURES AND UNIONS (9)

Basics of Structures-Declaring a Structure – Array of Structures –Passing Structures elements to Functions- Passing entire Structure to Function – Structures within Structures - Union – Union of Structures – Enumerated Data Types – type of Statement.

UNIT – IV POINTERS (9)

Pointers – Declaration, Accessing a variable, dynamic memory allocation, Pointers versus Arrays, Array of pointers, Pointers to functions and structure Pointers.

UNIT – V FILE MANAGEMENT (9)

File Management in C – Data hierarchy- Files and Streams – Sequential access file- Random access file - Preprocessors.

L: 45 T: 15 TOTAL: 60

REFERENCES:

1. V.Rajaraman “Computer Programming in C” PHI, New Delhi, 2001
2. Kamthane, A.N., “Programming with ANSI and Turbo C”, Pearson Education, Delhi, 2006.
3. Yashavant P. Kanetkar “ Pointers In C” , BPB Publications, New Delhi, 2002
4. E.Balagurusamy “ Programming in ANSI C ” , Tata McGraw Hill, 2004
5. Deitel and Deitel “ C How to Program ”, Addisson Wesley , 2001

073280002

ELECTRICAL ENGINEERING LABORATORY

(Any 10 Experiments)

L	T	P	C
0	0	3	1.5

LIST OF EXPERIMENTS

1. Verification of Ohm's and Krichoff's Law
2. Measurement of Power and Impedance in RL, RC and RLC circuits
3. Swinburn's Test on D.C. Shunt Motor
4. Load Test on D.C.Shunt Motor
5. Load Test on D.C. Shunt Generator
6. Open Circuit and Load Characteristics of Separately Excited DC Generator
7. OC & SC Test on Single Phase Transformer
8. Load Test on Single Phase Transformer
9. Load Test on Single Phase and Three Phase Induction Motor
10. Single Phase Half Wave and Full Wave Rectifiers
11. Study of Passive Filters
12. Study of Voltage Regulator Circuits
13. Study of SMPS and UPS

TOTAL : 45

073230002

**COMPUTER CONCEPTS AND PROBLEM SOLVING
LABORATORY**

L	T	P	C
0	0	3	1.5

LIST OF EXERCISES

1. Word Processing
2. Spreadsheet
3. Power point
4. Factorial
5. Fibonacci
6. Prime Generation
7. Removal of duplicates from an ordered Array
8. Finding the kth smallest element.

TOTAL : 45

073230003

C PROGRAMMING LABORATORY

L	T	P	C
0	0	3	1.5

LIST OF EXERCISES

Implementation of

1. Input / output function
2. Control Functions
3. Functions
4. Arrays
5. Pointers
6. Structures and Unions
7. Files

Using case studies on: Roots of a quadratic equation, Measures of location – Matrix Operations – Evaluation of trigonometric functions – Pay roll problems. String operations like substring, concatenation, finding a string from a given paragraph, finding the number of words in a paragraph.

TOTAL : 45

SEMESTER II

073020003

TECHNICAL ENGLISH - II

L	T	P	C
3	0	0	3

UNIT – I ENGLISH TODAY (9)

British and American Words – Communicating across cultures - Dealing with Discrimination – non verbal communication – values, beliefs & practices, Body language, The importance of Listening, Speaking and Interpersonal communication – purpose of Messages in Organization.

UNIT – II GRAMMAR (FOCUS ON LANGUAGE) (9)

Identifying the lexical and contextual meaning of words – expanding nominal compounds – framing of questions ('Wh' pattern, yes/no questions, tag questions) Subject – verb agreement, use of articles, preposition and conditionals – impersonal passive – error detection and punctuation.

UNIT – III RECEPTIVE SKILLS 1 & 2 – LISTENING AND READING (9)

Gap filling activity while listening - intensive listening – listening to a discourse and filling up gaps in a worksheet – comprehension tasks based on listening. Reading the gist to identify the topic sentence – its role – sequencing of sentences – transcoding diagrams – understanding discourse coherence and cohesion.

UNIT – IV PRODUCTIVE SKILL 1 – SPEAKING (9)

Making Oral presentations – planning, kinds of presentation – adapting your ideas to audience, planning visual and other device to involve the audience – conducting language games to enrich spoken skills – facing interviews and negotiating benefits.

UNIT – V PRODUCTIVE SKILL 2 – WRITING (9)

One sentence definition of technical terms – descriptions, paragraph writing, process description, check list, job application & resume, business letters (Calling for quotation, placing orders, enquiry etc) – Instruction and recommendation.

TOTAL: 45

REFERENCES:

1. Kitty O Locker, "Business Communication – Building critical Skills", Mc-Graw Hill, Third Edition 2007
2. Bridha Prabhakar, G. Subramanian, "Technical English for Engineering Students", Gems Publications, 2006.
3. Aysha Viswamohan, "English for Technical Communication", Tata McGraw Hill, 2007

073030003

APPLIED MATHEMATICS - II

L	T	P	C
3	1	0	4

UNIT – I MULTIPLE INTEGRALS (9)

Double integration- Cartesian and polar co-ordinates- Change of order of integration- Area as a double integral, Change of variables between Cartesian and polar coordinates- Triple integration- Volume as a triple integral

UNIT – II FOURIER SERIES (9)

Dirichlet's condition-General Fourier series-Odd and even functions-Half range Fourier series-Parseval's identity-Harmonic analysis

UNIT – III COMPLEX DIFFERENTIATION (9)

Functions of complex variable-analytic function- Necessary condition-Cauchy Riemann equation – Sufficient conditions(excluding proof) -Properties of analytic functions–Harmonic conjugate - Construction of analytic functions-Conformal Mapping- $w = z+a$, $w = az$, $w =1/z$. $w = z^2$ - Bilinear Transformation.

UNIT – IV COMPLEX INTEGRATION (9)

Statement and applications of Cauchy's Integral theorem and formula-Taylor's and Laurent's expansions- Isolated singularities- Residues-Cauchy's residue theorem- Contour integration over unit circle and semi circular contour (excluding poles on boundaries)

UNIT – V LAPLACE TRANSFORM (9)

Laplace Transforms-Condition for existence-Transforms of Elementary functions- Basic properties- Derivatives and integrals of transforms- Transforms of derivatives and integrals – Initial and Final value theorem- Transform of unit step functions and impulse function –Transform of periodic function-Inverse Laplace transform- Convolution theorem-Solution of linear ODE of second order with constant coefficient, using Laplace transformation

L: 45 T: 15 TOTAL: 60

REFERENCES:

1. Kandasamy. P, Thilagavathy K and Gunavathy K, Engineering Mathematics for First year B.E/B.Tech, S.Chand and company Ltd, New Delhi-110055, Seventh Revised edition 2007
2. Veerarajan T , Engineering Mathematics (for First year) Tata Mc Graw Hill Publishing co.New Delhi 110008 (2008)
3. Grewal B.S , Higher Engineering Mathematics 38th edition , Khanna Publishers New Delhi (2004)

UNIT – I**(12)**

Binary Systems : Digital Systems, Binary Numbers, Number Base Conversions, Octal and Hexadecimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic Boolean Algebra and Logic Gates: Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Digital Logic Gates.

UNIT – II**(12)**

Minimization: K-Map Method – Table Method, POS - SOP, Don't Care Conditions, NAND, NOR Implementation, Introduction to HDL. Combinational Logic: Combinational Circuits, Analysis and Design Procedure, Binary Adder, Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

UNIT – III**(12)**

Synchronous Sequential Logic: Sequential Circuits - Latches, Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment Design Procedure.

UNIT – IV**(12)**

Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counters-Johnson Counter.

UNIT – V**(12)**

Asynchronous Sequential Circuit : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of State and Flow Tables, Race – Free State Assignment Hazards, Design Example.

TOTAL : 60**REFERENCES:**

1. M.Morris Mano, "Digital Design", 3rd edition, Pearson Education, Delhi, 2007.
2. Donald P Leech, Albert Paul Malvino and Goutam Saha, "Digital Principles and Applications", Tata Mc Graw Hill, 2007.

073250001

OPERATING SYSTEMS

L	T	P	C
4	0	0	4

UNIT – I INTRODUCTION (12)

History of OS - Operating System Concepts - Functions - Structures- Types

UNIT – II PROCESS MANAGEMENT (12)

Processes - Inter process communication -Scheduling criteria - algorithms – Process Synchronization – Deadlocks

UNIT – III MEMORY MANAGEMENT (12)

Storage organization - contiguous – non-contiguous allocation - fixed partition multiprogramming - multiprogramming with variable partitions - Swapping – Virtual memory - Paging - Segmentation - Page replacement algorithms - Demand paging.

UNIT – IV DEVICE AND FILE MANAGEMENT (12)

I/O hardware - I/O Software - Disks – Disk Scheduling – File organization – File system implementation - allocation methods- Security - Protection mechanism.

UNIT – V CASE STUDY (12)

LINUX – Architecture - Kernel - Features - System calls - WINDOWS NT: Architecture – Features- Process Management

TOTAL : 60

REFERENCE:

1. Silberschatz A, Galvin, P. Gagne G "Operating System Concepts", John Wiley & Sons, 7th Edition, Singapore, 2004.
2. Deitel, H.M., "Operating Systems", Pearson Education, 3rd edition, New Delhi, 2004.
3. Andrew S. Tanenbaum, Modern Operating Systems", Pearson Education, 3rd Edition, New Delhi, 2007
4. Achyut S. Godbole, "Operating Systems", Tata Mc-Graw Hill, 2nd edition, New Delhi, 2003.

073230008

DATA STRUCTURES

L	T	P	C
3	1	0	4

UNIT – I PROBLEM SOLVING

(9)

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

UNIT – II LISTS, STACKS AND QUEUES

(9)

Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT

UNIT – III TREES

(9)

Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Separate Chaining – Open Addressing – Linear Probing – Priority Queues (Heaps) – Model – Simple implementations – Binary Heap

UNIT – IV SORTING

(9)

Preliminaries – Insertion Sort – Shellsort – Heapsort – Mergesort – Quicksort – External Sorting

UNIT – V GRAPHS

(9)

Definitions – Topological Sort – Shortest-Path Algorithms – Unweighted Shortest Paths – Dijkstra's Algorithm – Minimum Spanning Tree – Prim's Algorithm – Applications of Depth-First Search – Undirected Graphs – Biconnectivity – Introduction to NP-Completeness

L:45 T:15 TOTAL : 60

REFERENCE:

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.
3. ISRD Group, "Data Structures using C", Tata McGraw Hill, 2007
4. Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures – A Pseudocode Approach with C", ThomsonBrooks / COLE, 1998.

073230009

DIGITAL LABORATORY

L	T	P	C
0	0	3	1.5

LIST OF EXERCISES

1. Binary and BCD counter
2. Verification of NAND, NOR, XOR, AND, OR Gate Logic
3. Parity Generator
4. Multiplexer / Demultiplexers
5. Adder / Subtractor
6. Code Converters
7. Up / Down 4 bit Binary Counter
8. Up / Down 4 bit Decimal Counter
9. Shift Register
10. Ring Counter

TOTAL : 45

LIST OF EXERCISES

Implement the following exercises using C:

1. Array implementation of List Abstract Data Type (ADT)
2. Linked list implementation of List ADT
3. Cursor implementation of List ADT
4. Array implementations of Stack ADT
5. Linked list implementations of Stack ADT

The following three exercises are to be done by implementing the following source files

- (a) Program for 'Balanced Paranthesis'
- (b) Array implementation of Stack ADT
- (c) Linked list implementation of Stack ADT
- (d) Program for 'Evaluating Postfix Expressions'

An appropriate header file for the Stack ADT should be #included in (a) and (d)

6. Implement the application for checking 'Balanced Paranthesis' using array implementation of Stack ADT (by implementing files (a) and (b) given above)
7. Implement the application for checking 'Balanced Paranthesis' using linked list implementation of Stack ADT (by using file (a) from experiment 6 and implementing file (c))
8. Implement the application for 'Evaluating Postfix Expressions' using array and linked list implementations of Stack ADT (by implementing file (d) and using file (b), and then by using files (d) and (c))
9. Queue ADT
10. Search Tree ADT - Binary Search Tree
11. Heap Sort
12. Quick Sort

TOTAL : 45

073250017

OPERATING SYSTEMS LAB

L	T	P	C
0	0	3	1.5

LIST OF EXERCISES

1. Concurrency in Unix/ C- creating child processes using fork, exec
2. Implementation of Interprocess communication
3. Implementation of Process Scheduling Algorithms
4. Implementation of Process Synchronization
5. Design and Implementation of Deadlock algorithms
6. Implementation of Memory Management Algorithms
7. Implementation of Page replacement Algorithms
8. File system implementation
9. Directory implementation
10. Implementation of Disk Scheduling Algorithms

TOTAL : 45

SEMESTER III

073030004	MATHEMATICAL STRUCTURES	L	T	P	C
		3	1	0	4

UNIT I SET THEORY 9

Set theory: set notations basic set operations - Venn diagram - laws of set theory principles of inclusion and exclusion - partition - minsets – mathematical induction.

UNIT II PROPOSITIONAL CALCULUS 9

Propositions - Truth table-logical operators – Tautologies and contradiction- Logical equivalences and implications- laws of logic - normal forms- proofs in propositional calculus- Direct proof- conditional conclusion – indirect proof- Inconsistent set of premises.

UNIT III PREDICATE CALCULUS 9

Predicates- statement function – variables and quantifiers- Predicate formulae- Free and bound variables- The Universe of discourse- logical implications and equivalence for quantified statements- Theory of inference of predicate calculus.

UNIT IV RELATIONS AND FUNCTIONS 9

Relations- Properties of relations- Equivalence relation- composition of relations- closure operations on relations- Functions-Injective, surjective, bijective functions- composition of functions – inverse functions.

UNIT V FORMAL LANGUAGES AND AUTOMATA 9

Four classes of grammars- Types of grammars-normal forms-Derivation trees- ambiguous and unambiguous grammars- finite state automata(FSA)- nondeterministic finite state automata(NFSA)- conversion of non-deterministic automata to deterministic finite state automata. acceptance of a regular set by an FSA construction of a right linear grammar from a finite automata.

L:45 T:15 TOTAL:60

REFERENCE:

1. Kenneth H.Rosen, “ Discrete Mathematics and its Applications”, Tata Mc Graw Hill, Fourth Edition, 2002.
2. J.P.Tremblay and Manohar , “ Discrete Mathematical Structures with Applications to computer Science “, TMH ,1997.

073250004

DESIGN AND ANALYSIS OF ALGORITHMS

L	T	P	C
3	1	0	4

UNIT – I INTRODUCTION (9)

Fundamentals of algorithmic problem solving – important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Asymptotic NOTATIONS – Mathematical analysis for recursive and non-recursive algorithms.

UNIT – II DIVIDE AND CONQUER METHOD AND GREEDY METHOD (9)

Divide and conquer methodology – Merge Sort – Quick Sort – Binary search – Binary Tree Traversal – Multiplication of large integers- Strassen’s matrix multiplication Greedy method – Prim’s algorithm – Kruskal’s algorithm – Dijkstra’s Algorithm.

UNIT – III DYNAMIC PROGRAMMING (9)

Computing a binomial coefficient – Warshall’s and Floyd’s algorithm – Optimal binary search tree – Knapsack problem – Memory functions.

UNIT – IV BACKTRACKING AND BRANCH AND BOUND (9)

Backtracking – N-Queens problem – Hamiltonian circuit problem – subset sum problem- branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.

UNIT – V NP-HARD AND NP-COMPLETE PROBLEMS (9)

P & NP, problems – NP- complete problems – Approximation algorithms for NP-hard problems traveling salesman problem – Knapsack problem.

L:45 T:15 TOTAL:60

REFERENCES:

1. Anany Levitin “Introduction to the design and Analysis of Algorithms” Pearson Edition 2003.
2. Thomas H. Cormen, Charles E. Leiscrson, Ronald L. Rivest, “Introduction to algorithms” Prentice Hall 1990.

073250006

OBJECT ORIENTED PROGRAMMING

L	T	P	C
4	0	0	4

UNIT I INTRODUCTION (12)

Object-oriented paradigm, elements of object oriented programming – Merits and demerits of OO methodology – C++ fundamentals – data types, operators and expressions, control flow, arrays, strings, pointers and functions.

UNIT II PROGRAMMING IN C++ (12)

Classes and objects – constructors and destructors, operator overloading – inheritance, virtual functions and polymorphism

UNIT III FILE HANDLING (12)

C++ streams – console streams – console stream classes-formatted and unformatted console I/O operations, manipulators - File streams - classes file modes file pointers and manipulations file I/O – Exception handling

UNIT IV JAVA INTRODUCTION (12)

An overview of Java, data types, variables and arrays, operators, control statements, classes, objects, methods – Inheritance.

UNIT V JAVA PROGRAMMING (12)

Packages and Interfaces, Exception handling, Multithreaded programming, Strings, Input /Output.

TOTAL: 60

REFERENCES:

1. Herbert Schildt, "the Java 2 : Complete Reference", Fourth edition, TMH, 2002 (Unit IV, Unit-V)(Chapters 1-11,13,17)
2. Ira Pohl, "Object oriented programming using C++", Pearson Education Asia, 2003
3. Bjarne Stroustrup, "The C++ programming language", Addison Wesley, 2000
4. John R.Hubbard, "Progranning with C++", Schaums outline series, TMH, 2003
5. H.M.Deitel, P.J.Deitel, "Java : how to program", Fifth edition, Prentice Hall of India private limited.
6. E.Balagurusamy " Object Oriented Programming with C++", TMH 2/e

073250011

DATABASE MANAGEMENT SYSTEMS

L	T	P	C
4	0	0	4

UNIT I INTRODUCTION AND CONCEPTUAL MODELING (12)

Introduction to File and Database systems- Database system structure – Data Models – Introduction to Network and Hierarchical Models – ER model – Relational Model – Relational Algebra and Calculus.

UNIT II RELATIONAL MODEL (12)

SQL – Data definition- Queries in SQL- Updates- Views – Integrity and Security – Relational Database design – Functional dependences and Normalization for Relational Databases (up to BCNF).

UNIT III DATA STORAGE AND QUERY PROCESSING (12)

Record storage and Primary file organization- Secondary storage Devices- Operations on Files- Heap File- Sorted Files- Hashing Techniques – Index Structure for files –Different types of Indexes- B-Tree - B+Tree – Query Processing.

UNIT IV TRANSACTION MANAGEMENT (12)

Transaction Processing – Introduction- Need for Concurrency control- Desirable properties of Transaction- Schedule and Recoverability- Serializability and Schedules – Concurrency Control – Types of Locks- Two Phases locking- Deadlock- Time stamp based concurrency control – Recovery Techniques – Concepts- Immediate Update- Deferred Update - Shadow Paging.

UNIT V CURRENT TRENDS (12)

Object Oriented Databases – Need for Complex Data types- OO data Model- Nested relations- Complex Types- Inheritance Reference Types - Distributed databases- Homogenous and Heterogenous- Distributed data Storage – XML – Structure of XML- Data- XML Document- Schema- Querying and Transformation. – Data Mining and Data Warehousing.

TOTAL : 60

REFERENCES:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan- “Database System Concepts”, Fourth Edition, McGraw-Hill, 2002.
2. Ramez Elmasri and Shamkant B. Navathe, “Fundamental Database Systems”, Third Edition, Pearson Education, 2003.
3. Raghu Ramakrishnan, “Database Management System”, Tata McGraw-Hill Publishing Company, 2003.
4. Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- “Database System Implementation”- Pearson Education- 2000.

UNIT I BASIC STRUCTURE OF COMPUTERS (12)

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 (12)

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 (12)

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 (12)

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 (12)

Accessing I/O devices – Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB).

TOTAL : 60**REFERENCES:**

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, 5th Edition “Computer Organization”, McGraw-Hill, 2002.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, 6th Edition, Pearson Education, 2003.
3. David A.Patterson and John L.Hennessy, “Computer Organization and Design: The hardware / software interface”, 2nd Edition, Morgan Kaufmann, 2002.
4. John P.Hayes, “Computer Architecture and Organization”, 3rd Edition, McGraw Hill, 1998.

073250013

DATABASE MANAGEMENT SYSTEMS LAB

L	T	P	C
0	0	3	2

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 E-R 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.

073250008

ALGORITHMS DESIGN LABORATORY

L	T	P	C
0	0	3	2

1. Apply the divide and Conquer technique to arrange a set of numbers using merge sort method.
2. Perform Strassen's matrix multiplication using divide and conquer method.
3. Solve the knapsack problem using greedy method.
4. Construct a minimum spanning tree using greedy method.
5. Construct optimal binary search trees using dynamic programming method of problem solving.
6. Find the solution for traveling salesperson problem using dynamic programming approach.
7. Perform graph traversals.
8. Implement the 8-Queens Problem using backtracking.
9. Implement knapsack problem using backtracking.
10. Find the solution of traveling salesperson problem using backtracking

SEMESTER IV

073030010

PROBABILITY AND STATISTICS

L	T	P	C
4	0	0	4

UNIT – I STATISTICS **(12)**

Introduction - Classification and tabulation of statistical data – Diagrammatic and graphical representation of data.

UNIT – II MEASURES OF CENTRAL TENDANCY **(12)**

Mean , Median and Mode (Revision) – Range – Quartile deviation – Mean deviation – Standard Deviation – Measures of Skewness

UNIT – III CORRELATION AND REGRESSION **(12)**

Karl Pearson’s Coefficient of correlation – Spearman’s Rank correlation – Regression lines and coefficients.

UNIT – IV PROBABILITY & DISTRIBUTIONS **(12)**

Basic concepts - Conditional Probability- Addition and multiplication theorem – Random variables - Characteristics and applications of Binomial, Poisson and Normal distributions - simple problems.

UNIT – V TESTING OF HYPOTHESIS **(12)**

Concept of hypothesis – level of significance – testing difference between mean, proportions (Large and Small)- Chi-square distribution- Applications of test of independence of attributes and Goodness of fit – Testing of population variance. Statistical Quality Control: Introduction- Control charts for variables and attributes: - \bar{X} , R, np, p & c charts. **TOTAL : 60**

REFERENCES:

1. S.C. Gupta & V.K. Kapoor, “Fundamentals of Mathematical Statistics”, Sultan Chand and Sons, New Delhi, 2002
2. Veerarajan T., “Probability, Statistics and Random Processes”, Tata McGraw-Hill, New Delhi, 2002.
3. Ronald E. Walpole et al “Probability & Statistics for Engineers & Scientists”, Pearson Education, 2002.
4. Jay L.Devore, “Probability and Statistics for Engineering and the Sciences”, Thomson Asia Pvt Ltd., Singapore, 2002.

073230028

MICROPROCESSORS AND INTERFACING

L	T	P	C
3	1	0	4

UNIT – I 8-BIT MICROPROCESSOR (9)

8085 Architecture and Memory interfacing, interfacing I/O devices, Instruction set, Addressing Modes, Assembly language programming, counters and time delays, interrupts, timing diagram, Microprocessor applications.

UNIT – II MICROCONTROLLER: (9)

Intel 8031/8051 Architecture, Special Function Registers (SFR), I/O pins, ports and circuits, Instruction set, Addressing Modes, Assembly Language Programming, Timer and Counter Programming, Serial Communication, Connection to RS 232, Interrupts Programming, External Memory interfacing, Introduction to 16 bit Microcontroller

UNIT – III 80X86 PROCESSORS (9)

8086 Architecture, Pin Configuration, 8086 Minimum and Maximum mode configurations, Addressing modes, Basic Instructions, 8086 Interrupts, Assembly levels programming. Introduction to 80186, 80286, 80386, 80486 and Pentium processors.

UNIT – IV PERIPHERALS AND INTERFACING (9)

Serial and parallel I/O (8251 and 8255), Programmable DMA Controller (8257), Programmable interrupt controller (8259), keyboard display controller (8279), ADC/DAC interfacing. Inter integrated circuits interfacing (I²C standard).

UNIT – IV UNIT MICROPROCESSOR BASED SYSTEMS DESIGN, DIGITAL INTERFACING (9)

Interfacing to alpha numeric displays, interfacing to liquid crystal display (LCD 16 x 2 line), high power Devices and Optical motor shaft encoders, stepper motor interfacing, Analog interfacing and industrial control, microcomputer based smart scale, industrial process control system, Robotics and Embedded control, DSP and Digital Filters.

L: 45 T:15 TOTAL:60

REFERENCES:

1. Ramesh S. Gaonkar, Microprocessor Architecture Programming and Applications with 8085. Fourth edition, Penram International Publishing 2000.
2. Muhammad Ali Mazidi, Janice Gillispie Mazidi, The 8051 Microcontroller, and Embedded Systems, Prentice Hall 2000.
3. Douglas V.Hall, Microprocessor and Interfacing, Programming and Hardware. Tata McGraw Hill, Second Edition. 1999.
4. Kenneth J.Ayala., “The 8051 Microcontroller Architecture Programming and Applications”, Penram International Publishing (India). 1996.
5. Ray A.K.Bhurchandi.K.M, “Advanced Microprocessor and Peripherals”, Tata McGraw-Hill, 2002.

073250018

JAVA PROGRAMMING

L	T	P	C
3	1	0	4

UNIT – I JAVA BASICS-REVIEW (9)

Java Streaming – Components and events handling – Threading concepts – Networking-features – Byte code interpretation – Media Techniques.

UNIT – II JAVA DATA STRUCTURES (9)

Lists – Linear Structures – Ordered Structures – Sorting – Trees.

UNIT – III ADVANCED NETWORKING AND BEANS (9)

Client-Sever computing – Sockets – Content and Protocols handlers – Developing distributed applications – RMI – Remote objects – Object serialization – Bean Concepts – Events in Bean Box – Bean customization and persistence.

UNIT – IV JAVA DATABASE PROGRAMMING (9)

Connecting to Databases – JDBC principles – Databases access – Interacting – Database search – Accessing Multimedia databases – Database support in Web applications.

UNIT - V RELATED JAVA TECHNIQUES (9)

3D graphics – JAR file format and creation – Internationalization – Swing Programming – Advanced Java Scripting Techniques.

L:45 T:15 TOTAL:60

REFERENCES:

1. Ken Arnold, James Gosling and David Holmes, “The JAVA Programming Language”, 3rd edition, Tata Mc-Graw Hill, 2007
2. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly publishers, 2000
3. Patrick Naughton, “Complete Reference: Java2”, 7th edition, Tata Mc-Graw Hill, 2003
4. H.M.Deitel, P.J.Deitel, “Java : how to program”, Fifth edition, Prentice Hall of India private limited.2005

UNIT I DATA COMMUNICATIONS (12)

Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies – Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT II DATA LINK LAYER (12)

Error – detection and correction – Parity – LRC – CRC – Hamming code – low Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges.

UNIT III NETWORK LAYER (12)

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT IV TRANSPORT LAYER (12)

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 (12)

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

TOTAL: 60**REFERENCES:**

1. Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, 2004.
2. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
3. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Edition, 2003.
4. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

073230025	MICROPROCESSORS AND INTERFACING LAB	L	T	P	C
		0	0	3	1.5

1. Write an assembly language program to perform arithmetic operations on block of data using Hexadecimal numbers.
2. Write an assembly language program to perform arithmetic operations on block of data using BCD numbers.
3. Write an assembly language program to perform byte and string manipulation.
4. Write an assembly language program to interface Programmable Peripheral Interface.
5. Write an assembly language program to interface Programmable Timer.
6. Write an assembly language program to interface Programmable Communication Interface.
7. Write an assembly language program to interface Keyboard/Display Controller.
8. Write a program to Perform Power on Self Test.
9. Write a program for floppy disk trouble shooting.
10. Write a program for printer trouble shooting.

TOTAL:45

073250021	JAVA PROGRAMMING LABORATORY	L	T	P	C
		0	0	3	1.5

1. Implementation of Interfaces and packages.
2. Implementation of Multithreading and Exception Handling concepts.
3. Implementation of Applets.
4. Front End Development using swing and AWT.
5. Message transfer using TCP/IP Protocol.
6. Developing a simple Application using Servlets.
7. Developing a simple Application using JSP.
8. Developing a simple Application using JDBC.

TOTAL:45

073250020

COMPUTER NETWORKS LABORATORY

L	T	P	C
0	0	3	1.5

(All the programs are to be written using C)

1. Simulation of ARP / RARP.
2. Write a program that takes a binary file as input and performs bit stuffing and CRC Computation.
3. Develop an application for transferring files over RS232.
4. Simulation of Sliding-Window protocol.
5. Simulation of BGP / OSPF routing protocol.
6. Develop a Client – Server application for chat.
7. Develop a Client that contacts a given DNS Server to resolve a given host name.
8. Write a Client to download a file from a HTTP Server.
- 9 &10 Study of Network Simulators like NS2/Glomosim / OPNET

TOTAL:45

SEMESTER V

070250021

SOFTWARE ENGINEERING

L	T	P	C
3	1	0	4

UNIT – I SOFTWARE PROCESS (9)

Introduction –S/W Engineering Paradigm – life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering – computer based system – verification – validation – life cycle process – development process –system engineering hierarchy.

UNIT – II SOFTWARE REQUIREMENTS (9)

Functional and non-functional - user – system –requirement engineering process – feasibility studies – requirements – elicitation – validation and management – software prototyping – prototyping in the software process – rapid prototyping techniques – user interface prototyping -S/W document. Analysis and modeling – data, functional and behavioral models – structured analysis and data dictionary.

UNIT – III DESIGN CONCEPTS AND PRINCIPLES (9)

Design process and concepts – modular design – design heuristic – design model and document. Architectural design – software architecture – data design – architectural design – transform and transaction mapping – user interface design – user interface design principles. Real time systems - Real time software design – system design – real time executives – data acquisition system - monitoring and control system. SCM – Need for SCM – Version control – Introduction to SCM process – Software configuration items.

UNIT – IV TESTING (9)

Taxonomy of software testing – levels – test activities – types of s/w test – black box testing – testing boundary conditions – structural testing – test coverage criteria based on data flow mechanisms – regression testing – testing in the large. S/W testing strategies – strategic approach and issues - unit testing – integration testing – validation testing – system testing and debugging.

UNIT – V SOFTWARE PROJECT MANAGEMENT (9)

Measures and measurements – S/W complexity and science measure – size measure – data and logic structure measure – information flow measure. Software cost estimation – function point models – COCOMO model- Delphi method.- Defining a Task Network – Scheduling – Earned Value Analysis – Error Tracking - Software changes – program evolution dynamics – software maintenance – Architectural evolution. Taxonomy of CASE tools.

L:45 T:15 TOTAL:60

REFERENCES:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 6th edition, 2007.
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2001.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
5. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, Noida, 2003.

073250027

WEB TECHNOLOGY

L	T	P	C
4	0	0	4

UNIT – I INTRODUCTION (12)

Internet Principles – Basic Web Concepts – Client/Server model – Retrieving data from Internet – HTML and Scripting Languages – Standard Generalized Mark-up Language –Next Generation Internet – Protocols and applications.

UNIT – II COMMON GATEWAY INTERFACE PROGRAMMING (12)

HTML forms – CGI Concepts – HTML tags Emulation – Server-Browser communication – E-mail generation – CGI Client side Applets – CGI Server Side Applets – Authorization and security.

UNIT – III SOCKET PROGRAMMING (12)

Streaming – Networking principles – sockets – protocol handlers – content handlers – multicasting – Remote Method Invocation – activation – Serialization - Marshal Streams.

UNIT – IV SERVER SIDE PROGRAMMING (12)

Dynamic web content – cascading style sheets – DHTML – XML - Server side includes - communication – Active and Java Server Pages - Firewalls – proxy servers.

UNIT – V ONLINE APPLICATIONS (12)

Simple applications – On-line databases – monitoring user events – plug-ins – database connectivity – Internet Information Systems - EDI application in business – Internet commerce –Customization of Internet commerce

TOTAL:60

REFERENCES:

1. Rashim Mogha, Preetham.V.V., “ Java Web Services Programming”, Wiley Dreamtech, New Delhi, 2002.
2. Deitel ,“ XML How to Program”, first edition, Pearson Education, USA, 2002.
3. Jason Hunter, William Crawford, “Java Servlet Programming”, O’ Reilly Publications, USA, 1998.
4. Bhanu Pradhap, “ Understanding Active Server Pages “, Cyber Tech Publications ,New Delhi, 2001.
5. James Conard,Patrick Dengler,Brain Franics Et Al, “ Introducing .NET “, Shroff Publishers, New Delhi, 2001.

073250028

EMBEDDED SYSTEMS

L	T	P	C
3	1	0	4

UNIT I INTRODUCTION TO EMBEDDED SYSTEMS (9)

Definition and Classification – Overview of Processors and hardware units in an embedded system – Software embedded into the system – Exemplary Embedded Systems – Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits

UNIT II DEVICES AND BUSES FOR DEVICES NETWORK (9)

I/O Devices - Device I/O Types and Examples – Synchronous - Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices Parallel Port Devices - Sophisticated interfacing features in Devices/Ports- Timer and Counting Devices - ‘12C’, ‘USB’, ‘CAN’ and advanced I/O Serial high speed buses- and advanced buses.

UNIT III PROGRAMMING CONCEPTS (9)

Programming in assembly language (ALP) vs. High Level Language - C Program Elements, Macros and functions -Use of Pointers - Multiple function calls in a Cyclic Order in the Main Function Pointers – Function Queues and Interrupt Service Routines Queues Pointers –Cross compiler – Optimization of memory codes.

UNIT IV REAL TIME OPERATING SYSTEMS – PART - 1 (9)

Definitions Of Process, Tasks And Threads – Clear Cut Distinction Between Functions – Isrs And Tasks By Their Characteristics – Operating System Services- Device Management – File System Organisation And Implementation – I/O Subsystems – Interrupt Routines Handling In RTOS, Real Time Operating Systems, Inter Process Communication And Synchronisation — Remote Procedure Calls.

UNIT V REAL TIME OPERATING SYSTEMS – PART - 2 (9)

Study of Micro C/OS-II or Vx Works or Any other popular RTOS – RTOS System Level Functions – Case Studies of Programming with RTOS – Understanding Case Definition – Multiple Tasks and their functions – Creating a list of tasks – Functions and IPCs – Exemplary Coding Steps.

L:45 T:15 TOTAL:60

REFERENCES:

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint Oct. 2003
2. Steve Heath, Embedded Systems Design, Second Edition-2003, Newnes,
3. David E.Simon, An Embedded Software Primer, Pearson Education Asia, New Delhi, 2004.
4. Wayne Wolf, Computers as Components; Principles of Embedded Computing System Design – Harcourt India, Morgan Kaufman Publishers, New Delhi, 2006

075250006

SOFTWARE LAB

L	T	P	C
0	0	3	2

1. Study of case tools such as rational rose or equivalent tools

2. Requirements

Implementation of requirements engineering activities such as elicitation, validation, management using case tools

3. Analysis and design

Implementation of analysis and design using case tools.

4. Study and usage of software project management tools such cost estimates and scheduling

5. Documentation generators - Study and practice of Documentation generators.

6. Data modeling using automated tools.

7. Practice reverse engineering and re engineering using tools.

8. Exposure towards test plan generators, test case generators, test coverage and software metrics.

9. Meta modeling and software life cycle management.

075250007

WEB TECHNOLOGY LAB

L	T	P	C
0	0	3	2

Creating applications using web development tools

1. HTML & VB Script

2. XML - DTD

3. XML - XSL

4. XML - CSS

5. Translating EDifact document to XML

6. Active Server Pages

7. Java Server Pages

8. Java Servlets

9. .NET Platform

10. C# in .NET Platform

075250008

EMBEDDED SYSTEMS LAB

L	T	P	C
0	0	3	2

1. Study of 8051 Microcontroller kit and simulator
2. Arithmetic operations , Addition, Subtraction, Multiplication and Division
3. Interrupt programming
4. Design of moving display
5. Parallel interfacing , testing of I/O ports
6. Keyboard/display interface
7. Traffic light controller interface
8. ADC/DAC interface
9. Serial interfacing , Kit to PC communication
10. Interfacing a LCD display

075290004

MOBILE COMMUNICATION

L	T	P	C
4	0	0	4

UNIT I INTRODUCTION (12)

Mobile Communication, Mobile Computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Data Dissemination, Mobility Management, Security. Introduction to Cellular Systems, Global System for Mobile Communication (GSM), General Packet Radio Services(GPRS) and their architectures

UNIT II WIRELESS MEDIUM ACCESS CONTROL (12)

Interference in Cellular Systems, Frequency Management, Channel Assignment, Location management in cellular networks, Medium Access Control, Introduction to CDMA based systems, Spread Spectrum in CDMA systems, Coding Methods in CDMA

UNIT III MOBILE IP NETWORK LAYER (12)

Mobile IP Protocol Overview, Route Optimization, Mobility support for IPV6, Connectivity with 3G Networks, Packet Delivery and Handover Management, location Management, Registration, Tunneling and Encapsulation, Route Optimization, Dynamic Host Control protocol

UNIT IV MOBILE TRANSPORT LAYER (12)

Conventional TCP/IP protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other methods of TCP layer transmission for Mobile networks
MOBILE OPERATING SYSTEMS: Palm OS, Windows CE, Symbion OS, Linux for Mobile Devices

UNIT V DATA SYNCHRONIZATION (12)

Synchronization, Synchronization software, Synchronization Protocols, SyncML – Synchronization Language for Mobile Computing, Synchronized Multimedia markup Language.
MOBILE INTERNET: The WAP Architecture, Wireless Application Environment, Wireless Markup Language, WAP Binary XML Content Format, WAP Gateway, Wireless Gateway, Transcoding, InfoPyramid Framework, ProxiNet Transcoding Gateway

TOTAL:60

REFERENCES:

1. Raj Kamal, “Mobile Computing”, Oxford University Press, New Delhi, 2007.
2. Jochen H. Schller, “Mobile Communications”, second edition, Pearson Education, New Delhi, 2007.
3. Jon W. Mark, Weihua Zhuang, “Wireless Communications and Networking”, Prentice Hall, New Delhi, 2007.
4. Dharma Prakash Agarval, Qing , An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, Singapore, 2005.

075250016

UNIX INTERNALS LAB

L	T	P	C
0	0	3	2

The students are to take up mini projects along with the following list of experiments

1. Study of basic Unix commands and System calls
2. System calls for file systems
3. Study of kernel data structures
4. Awk programming
5. Shell programming

075250017

TCP/IP AND SOCKET PROGRAMMING LAB

L	T	P	C
0	0	3	2

1. Study of Socket Interface
2. Implementation of UDP
3. Implementation of TCP
4. Implementation of FTP
5. Implementation of Telnet
6. Implementation of Distance vector algorithm
7. Implementation of link state vector algorithm
8. Simulation of RIP
9. Simulation of ICMP
10. Study of IPV6

075250020

NETWORK SECURITY

L	T	P	C
3	1	0	4

UNIT I CONVENTIONAL AND MODERN ENCRYPTION (9)

Services – Attacks – Steganography - Classical Encryption Techniques – DES – Differential and Linear Cryptanalysis – Modes of operation – Encryption Algorithms – Triple DES – Blowfish – CAST128

UNIT II PUBLIC KEY ENCRYPTION (9)

Uniqueness – Number Theory concepts – Primality – Modular Arithmetic – Fermat & Euler Theorem – Euclid Algorithm – RSA Algorithm – Elliptic Curve Cryptography – DiffieHellmanKeyExchange

UNIT III AUTHENTICATION AND SECURITY PRACTICE (9)

Digests – Requirements – MAC – Hash function – Security of Hash and MAC – Birthday Attack – MD5 – SHA – RIPEMD – Digital Signature Standard - Authentication applications – Kerberos – Kerberos Encryption Techniques – PGP– IP Security Architecture– Web security – SSL – TLS – SET

UNIT IV PUBLIC- KEY INFRASTRUCTURE (9)

Legislation - Regulation and Guidelines, Non-repudiation - Certification Policies and Practices- Public-Key Infrastructure Assessment and Accreditation

UNIT V SYSTEM SECURITY & STANDARDS (9)

Intruders and Intrusion – Viruses and Worms – OS Security – Firewalls – Design Principles – Packet Filtering – Application gateways – Trusted systems – Counter Measures. 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.

L:45 T:15 TOTAL:60

REFERENCES:

1. William Stallings, “Cryptography & Network Security”, Pearson Education, 4th edition. New Delhi 2007.
2. Charlie Kaufman, Radia Perlman, Mike Speciner, “Network Security, Private Communication in a Public World”, Prentice Hall of India, 2nd edition, New Delhi, 2004.
3. Bruce Schneier, Niels Ferguson, “Practical Cryptography”, Wiley Dreamtech India Pvt Ltd, 1st edition, New Delhi, 2004.

075250027

NETWORK SECURITY LAB

L	T	P	C
0	0	3	2

1. Implementation of AES algorithm.
2. Implementation of RSA algorithm.
3. Key Exchange using Diffie-Hellman Approach.
4. Key Exchange using Elliptic Curves.
5. Authentication using Digital Signature Algorithm.
6. Implementation of Firewalls.
7. Develop a simple application using any public key cryptosystems.

075250022

ADVANCED JAVA PROGRAMMING LAB

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1. Multithreaded Messaging Application using Java Sockets
2. Multicast Communication using Java Multicast class
3. Distributed Programming with Java RMI
4. Database Programming using JDBC and Java Swing
5. Web Programming using JSP and EJB

075250031

ENTERPRISE RESOURCE PLANNING

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UNIT I INTRODUCTION (9)

ERP: An Overview, Enterprise – An Overview, Benefits of ERP, ERP and Related Technologies, Business Process Reengineering (BPR), Data Warehousing, Data Mining, OLAP, SCM

UNIT II ERP IMPLEMENTATION (9)

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

UNIT III THE BUSINESS MODULES (9)

Business modules in an ERP Package, Finance, Manufacturing, Human Resources, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution

UNIT IV THE ERP MARKET (9)

ERP Market Place, SAP AG, Peoplesoft, Baan, JD Edwards, Oracle, QAD, SSA

UNIT V ERP – PRESENT AND FUTURE (9)

Turbo Charge the ERP System, EIA, ERP and e-Commerce, ERP and Internet, Future Directions

TOTAL: 45

REFERENCES:

1. Alexis Leon, “ERP Demystified”, Tata McGraw Hill, New Delhi, 2000
2. Joseph A Brady, Ellen F Monk, Bret Wagner, “Concepts in Enterprise Resource Planning”, Thompson Course Technology, USA, 2001.
3. Vinod Kumar Garg and Venkitakrishnan N K, “Enterprise Resource Planning – Concepts and Practice”, PHI, New Delhi, 2003

075230046

XML AND WEB SERVICES

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UNIT I INTRODUCTION (9)

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)

XML – Name Spaces – Structuring With Schemas and DTD – Presentation Techniques – Transformation – XML Infrastructure.

UNIT III SOAP (9)

Overview Of SOAP – HTTP – XML-RPC – SOAP: Protocol – Message Structure – Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments.

UNIT IV WEB SERVICES (9)

Overview – Architecture – Key Technologies - UDDI – WSDL – ebXML – SOAP And Web Services In E-Com – Overview Of .NET And J2EE.

UNIT V XML SECURITY (9)

Security Overview – Canonicalization – XML Security Framework – XML Encryption – XML Digital Signature – XKMS Structure – Guidelines For Signing XML Documents – XML In Practice.

L:45 T:15 TOTAL:60

REFERENCES:

1. Frank. P. Coyle, XML, Web Services And The Data Revolution, Pearson Education, 2002.
2. Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, “ Developing Java Web Services”, Wiley Publishing Inc., 2004.
3. Sandeep Chatterjee, James Webber, “Developing Enterprise Web Services”, Pearson Education, 2004.
4. McGovern, et al., “Java Web Services Architecture”, Morgan Kaufmann Publishers,2005.

075250033

SERVICE ORIENTED ARCHITECTURE LAB

L	T	P	C
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1. Client side / Server side scripting programs for the Web Pages.
2. Experiments with Active / JAVA server pages.
3. Socket Programming.
4. JAVA Servlets.
5. On-line Transactions – Database connectivity

075250034

XML AND WEB SERVICES LAB

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1. Create an XML document to store an address book.
2. Create an XML document to store information about books and create the DTD files.
3. Create an XML schema for the book's XML document from exercise 2.
4. Create an XML document to store resumes for a job web site and create the DTD file
5. Present the book's XML document using cascading style sheets (CSS).
6. Write an XSLT program to extract book titles, authors, publications, book rating from the book's XML document and use formatting.
7. Use Microsoft DOM to navigate and extract information from the book's XML document.
8. Use Microsoft DSO to connect HTML form or VB form to the book's XML document and display the information.
9. Create a web service for temperature conversion with appropriate client program.
10. Create a web service for currency conversion (at five currencies) with appropriate client program

**LIST OF ELECTIVES
SEMSTER IV**

073230053	MULTIMEDIA SYSTEMS	L	T	P	C
		4	0	0	4

UNIT I INTRODUCTION TO MULTIMEDIA (12)

Introduction to making Multimedia- Multimedia Skills and training- Text: Using text in Multimedia- Computer and Text- Font Editing and Design Tools- Hypermedia and Hypertext

UNIT II MULTIMEDIA FILE HANDLING (12)

Sound – Images – Animation - Video

UNIT III DIGITAL VIDEO AND IMAGE COMPRESSION (12)

Evaluating a compression system - Redundancy and visibility-Video compression techniques- Standardization of an algorithm - The JPEG image compression standard- ITU –T Standards - MPEG motion video compression standard-DVI Technology.

UNIT IV HARDWARE, SOFTWARE AND MULTIMEDIA AUTHORIZING TOOLS (12)

Multimedia Hardware: Macintosh and Windows production platforms-Hardware Peripherels: Memory and Storage Devices, Input Devices, Output Devices, Communication Devices .Basic Software Tools

UNIT V MULTIMEDIA AND INTERNET (12)

Internetworking –connections -Internet services -Tools for WWW - Designing WWW.

TOTAL : 60

REFERENCES:

1. Multimedia: Making It Work, Tay Vaughan, 7th Edition, Tata Mc-Graw Hill.2008.
2. Multimedia Systems, John F.Koegel Buford, Pearson edition, 2003. (unit III).
3. Ranjan Parekh, Principles of Multimedia, TMH, 2006.
4. Multimedia: Computing, Communication and applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Edition, 2001.

073250023

CLIENT SERVER COMPUTING

L	T	P	C
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UNIT I INTRODUCTION (12)

Client Server Computing era, Real Client/Server, Fat Servers or fat clients, 2 tier Vs 3 tier, Intergalactic client server, client server for different models, building blocks

UNIT II CLIENT/SERVER OPERATING SYSTEMS (12)

Anatomy of Server programs, Server needs from OS, Server scalability, Client anatomy, Client needs from OS, Client OS trends , MAC OS, Linux OS, Win OS, Server OS trends , NetWare, Win 2000 Server, OS/2 warp server

UNIT III CLIENT SERVER MIDDLEWARE (12)

NOS Middleware, global directory services, X.500, LDAP, distributed time services, distributed security services, RPC messaging and peer to peer , Sockets, NetWare, NetBIOS, remote procedure call, messaging and queuing, MOM Vs RPC, Evolution of the NOS, DCE , The enterprise NOS, the internet as NOS

UNIT IV CLIENT SERVER TRANSACTION PROCESSING (12)

ACID Properties, Transaction Models, TP Monitor, TP Monitor and OS, TP Monitor and Transaction Management, TP Monitor Client/ Server Interaction types, Transactional RPC, Queues, TP Lite or TP Heavy, TP Lite versus TP Heavy – Managing Heterogeneous networks, Process Management, client/server invocations, Performance

UNIT – 5 CLIENT SERVER AND INTERNET (12)

Client server and internet, Web client server, 3 tier client server web style, CGI , the server side of web, CGI and State, SQL database servers, Middleware and federated databases, data warehouses, EIS/DSS to data mining, GroupWare Server , what is GroupWare, components of GroupWare

TOTAL:60

REFERENCES:

1. Robert Orfali, Dan Harkey & Jeri Edwards, “Essential Client/Server Survival Guide”, second edition, John Wiley & Sons, Singapore, 2003.
2. James E. Goldman, Phillip T. Rawles, Julie R. Mariga, “Client/Server Information Systems, A Business Oriented Approach”, John Wiley & Sons, Singapore, 2000.
3. Eric J Johnson, “A complete guide to Client / Server Computing”, first edition, Prentice Hall, New Delhi, 2001.
4. Smith & Guengerich, “Client /Server Computing”, Prentice Hall, New Delhi, 2002

073250026

PRINCIPLES OF MANAGEMENT

L	T	P	C
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UNIT I HISTORICAL DEVELOPMENT (12)

Definition of Management – Science or Art – Management and Administration – Development of Management Thought – Contribution of Taylor and Fayol – Functions of Management – Types of Business Organisation.

UNIT II PLANNING (12)

Nature & Purpose – Steps involved in Planning – Objectives – Setting Objectives – Process of Managing by Objectives – Strategies, Policies & Planning Premises- Forecasting – Decision-making.

UNIT III ORGANISING (12)

Nature and Purpose – Formal and informal organization – Organization Chart – Structure and Process – Departmentation by difference strategies – Line and Staff authority – Benefits and Limitations – De-Centralization and Delegation of Authority – Staffing – Selection Process - Techniques – HRD – Managerial Effectiveness.

UNIT IV DIRECTING (12)

Scope – Human Factors – Creativity and Innovation – Harmonizing Objectives – Leadership – Types of Leadership Motivation – Hierarchy of needs – Motivation theories – Motivational Techniques – Job Enrichment – Communication – Process of Communication – Barriers and Breakdown – Effective Communication – Electronic media in Communication.

UNIT V CONTROLLING (12)

System and process of Controlling – Requirements for effective control – The Budget as Control Technique – Information Technology in Controlling – Use of computers in handling the information – Productivity – Problems and Management – Control of Overall Performance – Direct and Preventive Control – Reporting – The Global Environment – Globalization and Liberalization – International Management and Global theory of Management.

TOTAL : 60

REFERENCES:

1. Harold Kooritz & Heinz Weihrich “Essentials of Management”, Tata McGraw-Hill, 1998.
2. Joseph L Massie “Essentials of Management”, Prentice Hall of India, (Pearson) Fourth Edition, 2003.
3. Tripathy PC And Reddy PN, “ Principles of Management”, Tata McGraw-Hill, 1999.
4. Decenzo David, Robbin Stephen A, ”Personnel and Human Reasons Management”, Prentice Hall of India, 1996

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OBJECT ORIENTED ANALYSIS AND DESIGN

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UNIT I INTRODUCTION (12)

Object model – Elements – Class and object – Nature of object/class – Relationship among objects – Relationship among classes – Quality classes and objects. Classification and Process - Classification – classical categorization –Conceptual clustering.

UNIT II ANALYSIS AND DESIGN (12)

Prototype theory – Analysis and design – Activities – Classical approaches – First principles – The Micro development process – The Macro Development process. UML Notations – UML model – Introduction – Use case – Usage –Class diagrams – Perspectives.

UNIT III UML MODELS (12)

Perspectives – Associations – Attributes – Operations – CRC cards – Usage – Interaction diagrams – Sequence diagrams – Collaboration diagrams – Package diagrams – Concurrent state diagram – Activity diagram – Decomposing and activity – Domain model – Specification model – System design – Detailed design – Coding

UNIT IV OBJECT ORIENTED TECHNIQUES (12)

Object Oriented model traditional techniques - Current techniques - Approach to identify attribute – Service – Method. Behaviour Specifications – Static behaviour specification techniques Control – Documenting control.

UNIT V STATIC AND DYNAMIC BEHAVIOR (12)

Documenting static behaviour - Dynamic behaviour identification - Specification techniques - Documenting - Event specifications - Identifying relationships.

TOTAL:60

REFERENCES:

1. Martin Fowler, Kendall Scott, “UML Distilled - Applying the standard object modeling language”, Addison Wesley, 1997.
2. Richard C Lee, William M Tepfenhart, “UML and C++ - A practical guide to object oriented development”, PH, 1997.
3. Grady Booch, “Object Oriented Analysis and Design with applications” II Edition Addison Wesley, 1994.
4. James Martin & James J. Odell, “Object Oriented Methods - A foundation”, Prentice Hall, 1997.

073250036

DATA WAREHOUSING

L	T	P	C
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UNIT I INTRODUCTION TO DATA WAREHOUSING (12)

Introduction , Definition and description , Need for Data Ware Housing, Need for strategic information , Failures of past Decision Support Systems , OLTP vs DWH – DWH Requirements – Trends in DWH – DWH Framework, Information Systems Framework (Zachman Framework) – Applications of DWH.

UNIT II DATA WAREHOUSING ARCHITECTURE & DESIGN (12)

Reference Architecture , Components of Reference Architecture – Data Ware House Building Blocks – Implementation , Physical Design Process, DWH Deployment Process.

DATABASE DESIGN : Dimensional Modeling , Basics , STAR Schema, Star Schema keys , Advantages of STAR Schema.

UNIT III INTRODUCTION TO DATA MINING (12)

Data Mining Tasks – Data Mining Vs KDD – Issues in Data Mining – DM Metrics – Data Mining and Databases – Data Mining Architecture – Future Trends. Data Cleaning – Data Transformation – Data Reduction.

UNIT IV DATA MINING PRIMITIVES & LANGUAGES (12)

Data Mining primitives – Data Mining Query Languages. Association Rules – Mining Single Dimensional Boolean Association Rules from Transactional Databases – Mining Multi Dimensional Association from Data Ware Houses.

UNIT V CLASSIFICATION, PREDICTION & CLUSTER ANALYSIS (12)

Issues regarding classification and prediction – Decision Tree – Bayesian Classification – Classifier Accuracy. Types of Data – Partitioning Methods – Hierarchical Methods. Mining Event Sequences – Visual DM – Text Mining – Web Mining.

TOTAL:60

REFERENCES:

1. Paulraj Ponniah, “Data WareHousing Fundamentals “, John Wiley & Sons, 1st edition, 2003.
2. M.H.Dunham , “Data Mining : Introductory and Advanced Topics”, Prentice Hall , 2003
3. Arun k Pujari , “Data Mining Techniques”, University Press, 1st edition, New Delhi, 2003.
4. Mehmed Kantardzic, “Data Mining Concepts , Methods and Algorithms “, John Wiley & Sons , 1st edition, New Delhi, 2003.

UNIT I INTRODUCTION (12)

Representation and classification of continuous time (CT) and discrete time (DT) signals, basic CT and DT signals, basic operations on CT and DT signals, description of CT and DT systems

UNIT II CONTINUOUS TIME SIGNALS AND SYSTEMS (12)

Linear time invariant (LTI) systems, convolution integral, causality and stability, CT system representation by differential equations

UNIT III FOURIER ANALYSIS OF THE CT, DT SIGNALS AND SYSTEMS (12)

Continuous Time Fourier Series (CTFS) and Fourier transform (CTFT), properties, inverse CTFT, frequency domain characterization of linear time invariant systems Fourier series representation of DT periodic signals (DTFS), properties, representation of DT aperiodic signals by Discrete Time Fourier Transform (DTFT), Properties, inverse DTFT, frequency response of systems characterized by difference equations

UNIT IV SAMPLING AND RECONSTRUCTION OF SIGNALS (12)

Sampling theorem, effect of under sampling, aliasing error, sampling methods, impulse, natural and flat top sampling, reconstruction of sampled signals, sample and hold, decimation and interpolation, discrete time processing of CT signals

UNIT V DISCRETE TIME SIGNALS AND Z TRANSFORM (12)

Linear Shift Invariant (LSI) systems, convolution sum, causality and stability, DT system representation by difference equations The WAP Architecture, Wireless Application Environment, Wireless Markup Language, WAP Binary XML Content Format, WAP Gateway, Wireless Gateway, Transcoding, InfoPyramid Framework, ProxiNet Transcoding Gateway, Z transforms and its properties, inverse Z-transform, analysis of LSI systems using Z-transform, stability and causality

TOTAL: 60**REFERENCES:**

1. Alan V Oppenheim, Alan S Wilsky., and Hamid Nawab S., "Signals and Systems", second edition, Prentice Hall, New Delhi, 2005.
2. Simon Haykin and Barry Van Veen, "Signals and Systems", second edition, John Wiley & Sons Inc., New York, 2003.
3. Ashok Ambardar, "Introduction to Analog and Digital Signal Processing", second edition, Thomson learning, New Delhi, 2004.
4. Dimitris G Monalakis, John G Proakis, "Digital Signal Processing, Principles, Algorithms and Applications", fourth edition, Pearson Education, New Delhi, 2006.

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WIRELESS TECHNOLOGY

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UNIT I WIRELESS MEDIUM (12)

Air Interface Design – Radio propagation mechanism – Pathloss modeling and Signal Coverage – Effect of Multipath and Doppler – Channel Measurement and Modelling – Simulation of Radio Channel

UNIT II WIRELESS MEDIUM ACCESS (12)

Fixed Assignment Access for Voice Networks – Random Access for Data Networks – Integration of Voice and Data Traffic

UNIT III WIRELESS NETWORK OPERATION (12)

Wireless Network Topologies – Cellular Topology – Cell fundamentals – Signal to Interference Ratio – Capacity Expansion – Mobility Management – Resources and Power Management – Security in Wireless Networks.

UNIT IV WIRELESS WAN (12)

GSM and TDMA Technology – Mobile Environment – Communication in the Infrastructure – CDMA Technology – IS95 – IMT2000 – Mobile Data Networks – CDPD Networks – GPRS – Mobile Application Protocol

UNIT V WIRELESS LANS AND HIPERLANS (12)

Introduction to wireless LANs – IEEE 802.11 – WPAN IEEE 802.15 – Wireless Home Networking – Concepts of Bluetooth Technology – Wireless Geolocation.

TOTAL: 60

REFERENCES:

1. Kaveth Pahlavan, K.Prasanth Krishnamurthy, “Principles of Wireless Networks” Pearson Education Asia, 1st edition, New Delhi, 2002
2. William Stallings, “Wireless Communications and Networks”, Prentice Hall, 2nd Edition, New Delhi, 2002.
3. Neeli Prasad, Anand Prasad, “WLAN System & Wireless IP for Next Generation Communications”, Artech House, 1st edition, USA, 2002
4. Assuncion Santamaria, Francisco Lopez-Hernandez, “Wireless LAN Standards and Applications”, Artech House, 1st Edition, USA, 2001

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PROFESSIONAL ETHICS

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UNIT I ENGINEERING ETHICS (12)

Senses of 'engineering ethics' – variety of moral issues – types of inquiry – moral dilemmas – moral autonomy – Kohlberg's theory – Gilligan's theory – consensus and controversy – professions and professionalism – professional ideals and virtues – theories about right action – self-interest – customs and religion – uses of ethical theories.

UNIT II ENGINEERING AS SOCIAL EXPERIMENTATION (12)

Engineering as experimentation – engineers as responsible experimenters – codes of ethics – a balanced outlook on law – the challenger case study.

UNIT III ENGINEER'S RESPONSIBILITY FOR SAFETY (12)

Safety and risk – assessment of safety and risk – risk benefit analysis – reducing risk – the three mile island and Chernobyl case studies.

UNIT – IV RESPONSIBILITIES AND RIGHTS (12)

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 (12)

Multinational corporations – environmental ethics – computer ethics – weapons development – engineers as managers – consulting engineers – engineers as expert witnesses and advisors – moral leadership – sample code of conduct

TOTAL : 60

REFERENCES:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw Hill, New York, 1996.
2. Charles D Fleddermann, "Engineering Ethics", Prentice Hall, New Mexico, 1999.
3. Laura Schlesinger, "How Could You Do That: The Abdication of Character, Courage, and Conscience", Harper Collins, New York, 1996.
4. Stephen Carter, "Integrity", Basic Books, New York, 1996.
5. Tom Rusk, "The Power of Ethical Persuasion: From Conflict to Partnership at Work and in Private Life", Viking, New York, 1993

UNIT I PC HARDWARE INTRODUCTION & OVERVIEW (12)

Personal computing History, Types of systems, Documentation – Technical Reference Manuals – Hardware Maintenance Manuals. System Teardown and Inspection : Hand Tools, Soldering and Desoldering Tools, Loop Back Connectors, Meters, Logic Probes and Logic Pulsers, Outlet Tester and Chemicals, Disassembly Procedures.

UNIT II PRIMARY SYSTEM COMPONENTS (12)

Types of Motherboards, ROM BIOS Compatibility. Bus Slots and I/O Cards. The Processor Bus, the Memory Bus and the Address Bus, Expansion Slots. Types of I/O Buses : The ISA Bus, EISA Bus, VESA Bus and PCI Bus. I/O port Addresses and DMA Channels. PC System Memory : Base Memory, Upper Memory Area, Extended Memory, Expanded Memory, Total Installed Memory Versus Total Usable Memory. Physical Memory and Testing Memory.

UNIT III DISK DRIVES (12)

Types of Floppy Drives, Handling Recording Problems, Analysis Floppy Disk Construction, Drive Installation Procedure Trouble Shooting and Correcting Problems, Repairing Floppy Drives. Hard Disk Drives : Hard disk Interfaces and Installation procedure Hard Disk Trouble Shooting and Repair.

UNIT IV SYSTEM ASSEMBLY AND MAINTENANCE (12)

System upgrades – Upgrades system Memory, Speeding up a system, upgrading the DOS Version. Preventive Maintenance : Active and Passive Preventive Maintenance Procedure – Power – Protection Systems – Surge suppressions, Phone line surge protectors, Line conditioners, Backup Power, dedicated data backup hardware.

UNIT V DIAGNOSTIC TOOLS AND TROUBLESHOOTING (12)

Software and Hardware Diagnostic Tools: The power On self test (POST), General purpose Diagnostic Programs – AMI Diag, Checkit Pro-Norton Diagnostics, Qaplus, Norton utilities, Anti-Virus Tools. Operating System and Trouble Shooting : DOS Components, The Basic process, How DOS Loads and starts, File Management, DOS File spared allocation, The DEBUG Program, Memory Resident Software Conflicts.

TOTAL :60

REFERENCES:

1. Scott Mueller “Upgrading and Repairing PCs”, 14th Edition, Pearson Education, New Delhi, 2002.
2. Govindaraju B. “IBM PC and Clones : Hardware, Trouble Shooting and Maintenance”, 2nd Edition, Tata McGraw Hill Pub. Co., New Delhi, 2002.

SEMSTER VI

075230033

EXTREME PROGRAMMING

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UNIT I INTRODUCTION (12)

Introducing C# - Understanding .Net: The C# environment – Overview of C# - Literals, Variables and Data Types – Operators and Expressions.

UNIT II DECISION MAKING (12)

Decision Making, Branching and Looping – if, if...else, switch, ...? : operators, while, do, for, foreach and jump in loops, Methods in C# - declaring methods, the main method, invoking methods, nesting methods, method parameters, pass by value and pass by reference, output parameters, Variable argument lists – Overloading methods.

UNIT III ARRAYS (12)

Arrays – Creating an array, Variable size arrays, Array list class – Manipulating Strings – Structures, Nested Structures – Enumerations, Initialization, base types and type conversion.

UNIT IV CLASSES AND OBJECTS (12)

Classes and Objects – Definition, Creating objects, Constructors and destructors, Nesting, Overloaded constructors, Inheritance and Polymorphism – classical, multilevel, hierarchical inheritances, Subclass, Subclass constructors, Overriding methods, Abstract Classes and Methods, Interfaces, Interfaces and Inheritance – Operator Overloading.

UNIT V DELEGATES AND DECLARATION METHODS (12)

Delegates – Declaration Methods, Initialization and Invocation, Multicast delegates, I/O operations – Console Input/Output, Formatting, Errors and Exceptions, Type of Errors – Exceptions – Exception for debugging.

TOTAL:60

REFERENCES:

1. E. Balagurusamy, Programming in C#, Tata Mc-Graw Hill Publishing Company, New Delhi, 2002.
2. Selvi, T. A Text book on C# : A Systematic approach to object oriented programming, Pearson Education, Delhi, 2003.
3. Lippman, C# Primer, 3rd Edition, Pearson Education, Delhi, 2002.
4. Liberty, J. Programming C#, Second Edition, O'Reilly & Associates Inc., California, 2002.
5. Albahari, B. Prayton, P. and Marill, B. C# Essentials, O'Reilly & Associates Inc., California, 2002.

075250015

OPEN SOURCE COMPUTING

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UNIT I INTRODUCTION (12)

Introduction of Open Sources – Need of Open Sources – Advantages and applications of Open sources – Commercial aspects of Open source movement

UNIT II OPEN SOURCE OS: LINUX (12)

Introduction – General Overview – Kernel Mode and user mode – Process – Advanced concepts – Scheduling – Cloning – Signals

UNIT III SOLARIS (12)

Fundamentals - The Solaris 8 Operating Environment Components - Accessing Directories and Files - Using File Security - Creating Archive Files - Connecting Remotely - Managing System Processes - Using the Korn Shell and the CDE

UNIT IV OPEN SOURCE DATABASE: MySQL (12)

Introduction – SQL programs – Selection – Strings – Date and Time – Working with metadata – Sequences – MySQL and web

UNIT-V OPEN SOURCE PROGRAMMING LANGUAGES: PHP (12)

Introduction – Programming in web environment – Variables – Constants – Datatypes – Operators – Statements – Functions – Arrays – OOP – String manipulation – File handling and data storage – PHP and SQL database – PHP connectivity – Debugging and error handling – Security – Templates – Apache web server – Working with Web Server – Configuring and using apache web services – Eclipse IDE platform

TOTAL:60

REFERENCES:

1. Remy Card, Eric Dumas, Frank Mevel, “The Linux Kernel Book”, second edition, John Wiley Publications, New York, 2003.
2. Darry, Gove, “ Solaris Application Programming”, first edition, Prentice Hall, New Delhi, 2007.
3. Steve Suehring, “MySQL Bible”, first edition, John Wiley & Sons, New York, 2002.
4. Rasmus Lerdorf, Levtin Tatroe, “Programming PHP”, second edition, O’Relly Publications, USA, 2002.
5. Peter Wainwright, “Professional Apache”, third edition, Wrox Press, USA, 2002.

075230035

BUSINESS DATA PROCESSING

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UNIT I INTRODUCTION (12)

Organizational behaviour- Foundations of Individual behavior-Perception and Individual decision making-values, attitude and job satisfaction.

UNIT II GROUPS IN ORGANISATION (12)

Foundations of group behaviour- Understanding work teams- Communication – Leadership.

UNIT III ORGANISATION SYSTEM (12)

Foundations of organization structure – Technology – Work design and stress – Human resource policies and practices – Organisational Culture.

UNIT IV BUSINESS PROCESS RE-ENGINEERING AND IT (12)

Basic concepts and the need for BPR-Principles of BPR and the role of IT- BPR and restructuring the organization.

UNIT V NETWORK ORGANIZATIONS (12)

Networked organization- virtual corporations.

TOTAL:60

REFERENCES:

1. Stephen P.Robbins “Organizational behavior”, PHI, 12th edition, 2006.
2. Turban,Mclean,wetherbe, ”Information Technology for management” John Wiely and Sons, 2001.
3. Ravi Kalakota and Marcia Robinson, “E-Business; Roadmap for Success; Pearson Education, 2000.
4. Vikram Sethi & William R King, “Organizational transformation through business process reengineering”, Pearson education, 2006.

UNIT I	DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS	12
Elements of visual perception – Image sampling and quantization Basic relationship between pixels – Basic geometric transformations-Introduction to Fourier Transform and DFT – Properties of 2D Fourier Transform – FFT – Separable Image Transforms -Walsh – Hadamard – Discrete Cosine Transform, Haar, Slant – Karhunen – Loeve transforms.		
UNIT II	IMAGE ENHANCEMENT TECHNIQUES	12
Spatial Domain methods: Basic grey level transformation – Histogram equalization – Image subtraction – Image averaging –Spatial filtering: Smoothing, sharpening filters – Laplacian filters – Frequency domain filters : Smoothing – Sharpening filters – Homomorphic filtering.		
UNIT III	IMAGE RESTORATION:	12
Model of Image Degradation/restoration process – Noise models – Inverse filtering -Least mean square filtering – Constrained least mean square filtering – Blind image restoration – Pseudo inverse – Singular value decomposition.		
UNIT IV	IMAGE COMPRESSION	12
Lossless compression: Variable length coding – LZW coding – Bit plane coding- predictive coding-DPCM.		
Lossy Compression: Transform coding – Wavelet coding – Basics of Image compression standards: JPEG, MPEG,Basics of Vector quantization.		
UNIT V	IMAGE SEGMENTATION AND REPRESENTATION	12
Edge detection –Thresholding - Region Based segmentation – Boundary representation: chain codes-Polygonal approximation –Boundary segments –boundary descriptors: Simple descriptors-Fourier descriptors - Regional descriptors –Simple descriptors- Texture		
		TOTAL : 60

REFERENCES:

1. Rafael C Gonzalez, Richard E Woods 2nd Edition, Digital Image Processing - Pearson Education 2003.
2. William K Pratt, Digital Image Processing John Willey (2001)
3. Image Processing Analysis and Machine Vision – Millman Sonka, Vaclav hlavac, Roger Boyle, Broos/colic, Thompson Larniy (1999).
4. A.K. Jain, PHI, New Delhi (1995)-Fundamentals of Digital Image Processing.
5. Chanda Dutta Magundar – Digital Image Processing and Applications, Prentice Hall of India, 2000

075250028

ARTIFICIAL INTELLIGENCE

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UNIT - I INTRODUCTION (9)

Intelligent Agents – Agents and environments - Good behavior – The nature of environments – structure of agents - problem solving agents – example problems – searching for solutions – uniformed search strategies - searching with partial information.

UNIT - II SEARCHING TECHNIQUES (9)

Informed search and exploration – Informed search strategies – heuristic function – local search algorithms and optimistic problems – local search in continuous spaces – online search agents and unknown environments - Constraint satisfaction problems (CSP) – Backtracking search and Local search for CSP – Structure of problems - Adversarial Search — Alpha – Beta Pruning – imperfect real-time decision

UNIT - III KNOWLEDGE REPRESENTATION (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 –forward, backward chaining –Resolution - Knowledge representation - Actions - Simulation and events - Mental events

UNIT - IV LEARNING (9)

Learning from observations - forms of learning - Inductive learning - Learning decision trees - Ensemble learning - Knowledge in learning – Logical formulation of learning – Explanation based learning – Statistical learning methods - Learning with complete data - Learning with hidden variable - EM algorithm - Instance based learning - Neural networks - Active reinforcement learning - Generalization in reinforcement learning.

UNIT - V APPLICATIONS (9)

Communication – Communication as action – Formal grammar for a fragment of English – Syntactic analysis – Augmented grammars – Semantic interpretation – Ambiguity and disambiguation – Discourse understanding – Grammar induction - Probabilistic language processing - Probabilistic language models – Information retrieval – Information Extraction – Machine translation.

TOTAL: 45

REFERENCES:

1. Stuart Russell, Peter Norvig, “Artificial Intelligence – A Modern Approach”, 2nd Edition, Pearson Education / Prentice Hall of India, 2004.
2. Nils J. Nilsson, “Artificial Intelligence: A new Synthesis”, Harcourt Asia Pvt. Ltd., 2000.
3. Elaine Rich and Kevin Knight, “Artificial Intelligence”, 2nd Edition, Tata McGraw-Hill, 2003.

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ADVANCED DBMS

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UNIT I DATABASE MANAGEMENT (9)

Relational Data Model – SQL - Database Design - Entity-Relationship Model – Relational Normalization – Embedded SQL – Dynamic SQL – JDBC – ODBC.

UNIT II ADVANCED DATABASES (9)

Object Databases - Conceptual Object Data Model – XML and Web Data – XML Schema – Distributed Data bases – OLAP and Data Mining – ROLAP and MOLAP

UNIT III QUERY AND TRANSACTION PROCESSING (9)

Query Processing Basics – Heuristic Optimization – Cost, Size Estimation - Models of Transactions – Architecture – Transaction Processing in a Centralized and Distributed System – TP Monitor.

UNIT IV IMPLEMENTING AND ISOLATION (9)

Schedules – Concurrency Control – Objects and Semantic Commutativity – Locking – Crash, Abort and Media Failure – Recovery – Atomic Termination – Distributed Deadlock – Global Serialization – Replicated Databases – Distributed Transactions in Real World.

UNIT V DATABASE DESIGN ISSUES (9)

Security – Encryption – Digital Signatures – Authorization – Authenticated RPC - Integrity - Consistency - Database Tuning - Optimization and Research Issues.

TOTAL: 45

REFERENCES:

1. Philip M. Lewis, Arthur Bernstein, Michael Kifer, “Databases and Transaction Processing: An Application-Oriented Approach”, Addison-Wesley, 2002
2. R. Elmasri and S.B. Navathe, Fundamentals of Database Systems, 3rd Edition, Addison Wesley, 2004
3. Abraham Silberschatz, Henry. F. Korth, S.Sudharsan, Database System Concepts, 4th Edition., Tata McGraw Hill, 2004
4. Raghu Ramakrishnan & Johannes Gehrke, “Database Management Systems”, 3rd Edition, TMH, 2003

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DISTRIBUTED OPERATING SYSTEMS

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UNIT I INTRODUCTION (9)

Fundamentals – evolution – System Models – Distributed operating System – Issues – Distributed Computing environment Message passing – Introduction – Features – Issues – Synchronization – Buffering – Message – Encoding – Decoding – Process addressing – Failure Handling.

UNIT II REMOTE PROCEDURE CALL (9)

Introduction – Model – Transparency – Implementation – Stub Generation – Messages – Marshaling Arguments and results –server Management – Parameter passing Semantics - Call Semantics – Communication Protocols – Complicated RPC's – Client – Server Binding – Exception handling – Security Distributed shared Memory – Introduction – Architecture – Issues – Granularity Structure – Consistency Models – Replacement Strategy – Thrashing.

UNIT III SYNCHRONIZATION (9)

Introduction – Clock Synchronization – Event ordering – Mutual Exclusion – Deadlock – Election Algorithms.

UNIT IV RESOURCE MANAGEMENT (9)

Introduction – Features – Task Assignment approach – Load-Balancing Approach - Load -Sharing Approach Process Management – Introduction – Process Migration – Threads.

UNIT V DISTRIBUTED FILE SYSTEMS (9)

Introduction – Features – File Models – Accessing Models – Sharing Semantics – Caching Schemes – File Replication – Fault Tolerance – Atomic Transactions – Design Principles Naming – Introduction – Features – Terminologies – Concepts.

TOTAL: 45

REFERENCES:

1. Pradeep K. Sinha, “Distributed Operating Systems, Concepts and Design” Prentice Hall of India, New Delhi, 2001.
2. Andrew S. Tanenbaum “Distributed Operating Systems”, Pearson Education, New Delhi, 2002
3. Mukesh Singhal and Nirajan G.Shivaratri “Advanced Concepts in Operating Systems”, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2001

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DECISION SUPPORT SYSTEMS

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UNIT I DECISION-MAKING AND COMPUTERIZED SUPPORT (9)

Management Support Systems: An Overview, Decision Making, Systems, Modeling, and Support.

UNIT II DECISION SUPPORT SYSTEMS (9)

An Overview, Data Management: Warehousing, Access, and Visualization , Modeling and Analysis , Knowledge based Decision Support and Artificial Intelligence , User Interface and Decision Visualization Applications , Constructing a Decision Support System and DSS Research.

UNIT III COLLABORATION, COMMUNICATION, AND ENTERPRISE SUPPORT SYSTEMS (9)

Networked Decision Support: The Internet, Intranets, and Collaborative Technologies, Group Decision Support Systems, Executive Information and Support Systems.

UNIT IV FUNDAMENTALS OF EXPERT SYSTEMS AND INTELLIGENT SYSTEMS (9)

Fundamentals of Expert Systems, Knowledge Acquisition and Validation, Knowledge Representation, Inferences, Explanations, and Uncertainty, Building Expert Systems: Process and Tools.

UNIT V CUTTING-EDGE DECISION SUPPORT TECHNOLOGIES (9)

Neural Computing: The Basics, Neural Computing Applications, Genetic Algorithms, Fuzzy Logic, and Hybrid Intelligent Systems , Intelligent Agents and Creativity , Implementing and Integrating Management Support Systems , Organizational and Societal Impacts of Management Support Systems.

TOTAL: 45

REFERENCES:

1. Efraim Turban, Jay E. Aronson, "Decision Support Systems and Intelligent Systems", Prentice Hall, New Delhi, 2004
2. George Marakas, "Decision Support Systems in the 21st Century", Prentice Hall, New Delhi, 2003
3. Robert J Thierauf, "User Oriented Decision Support Systems", Prentice Hall, New Delhi, 1998

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INTERNET PROGRAMMING

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UNIT I BASIC NETWORK AND WEB CONCEPTS (9)

Internet standards – TCP and UDP protocols – URLs – MIME – CGI – Introduction to SGML.

UNIT II JAVA PROGRAMMING (9)

Java basics – I/O streaming – files – Looking up Internet Address - Socket programming – client/server programs – E-mail client – SMTP - POP3 programs – web page retrieval – protocol handlers – content handlers - applets – image handling - Remote Method Invocation.

UNIT III SCRIPTING LANGUAGES (9)

HTML – forms – frames – tables – web page design - JavaScript introduction – control structures – functions – arrays – objects – simple web applications

UNIT IV DYNAMIC HTML (9)

Dynamic HTML – introduction – cascading style sheets – object model and collections – event model – filters and transition – data binding – data control – ActiveX control – handling of multimedia data

UNIT V SERVER SIDE PROGRAMMING (9)

Servlets – deployment of simple servlets – web server (Java web server / Tomcat / Web logic) – HTTP GET and POST requests – session tracking – cookies – JDBC – simple web applications – multi-tier applications.

TOTAL : 45

REFERENCES:

1. Deitel, Deitel and Nieto, “Internet and World Wide Web – How to program”, Pearson Education Publishers, 2000.
2. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly Publishers, 2002
3. R. Krishnamoorthy & S. Prabhu, “Internet and Java Programming”, New Age International Publishers, 2004.
4. Thomno A. Powell, “The Complete Reference HTML and XHTML”, fourth edition, Tata McGraw Hill, 2003.
5. Naughton, “The Complete Reference – Java2”, Tata McGraw-Hill, 3rd edition, 1999.

SEMSTER IX

075230022

COMPILER DESIGN

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UNIT I INTRODUCTION TO COMPILERS: (9)

Compilers, Analysis of the Source Program, The Phases of a Compiler, Cousins of the Compiler, The Grouping of Phases, Compiler-Construction Tools, Translators-Compilation and Interpretation, A simple one-pass compiler

UNIT II LEXICAL ANALYSIS: (9)

Need and role of lexical analyzer-Lexical errors, Input Buffering - Specification of Tokens, Recognition of Tokens, A Language for Specifying Lexical Analyzers, Finite Automata, From a Regular Expression to an NFA, Design of a Lexical Analyzer Generator

UNIT III SYNTAX ANALYSIS: (9)

Need and role of the parser- Context Free Grammars-Top Down parsing - Recursive Descent Parser - Predictive Parser - LL(1) Parser -Shift Reduce Parser - LR Parser - LR (0) item - Construction of SLR Parsing table -Introduction to LALR Parser, YACC- Design of a syntax analyzer for a sample language

UNIT IV SYNTAX DIRECTED TRANSLATION AND TYPE CHECKING: (9)

Syntax-Directed Definitions, Construction of Syntax Trees, Bottom-Up Evaluation of S-Attributed Definitions, L-Attributed Definitions, Top Down Translation, Bottom-Up Evaluation of Inherited Attributes, Forms of intermediate code -Translation of Assignment, Boolean Expression and Control statements - Back patching type systems - Specification of a simple type checker - equivalence of type expressions - type conversions

UNIT V RUN-TIME ENVIRONMENT AND ERROR HANDLING: (9)

Source language issues-Storage organization-Storage allocation-parameter passing-Symbol tables-Dynamic storage allocation-Storage allocation in FORTRAN, Error handling and recovery in different phases Principal sources of Optimization – DAG - Optimization of basic blocks-Global data flow analysis - Efficient data flow algorithms - Issues in design of a code generator-a simple code generator algorithm

TOTAL :45

REFERENCES:

1. Alfred V.Aho, Ravi Sethi and Jeffrey D.Ullman, "Compilers – Principles, Techniques and Tools", second edition, Pearson Education, New Delhi, 2006.
2. Dhamdhare D M, "Compiler Construction Principles and Practice", second edition, Macmillan India Ltd., New Delhi, 2001.
3. Jean Paul Tremblay, Paul G Serenson, "The Theory and Practice of Compiler Writing", McGraw Hill, New Delhi, 2001.
4. Dick Grone, Henri E Bal, Cerial J H Jacobs and Koen G Langendoen, "Modern Compiler Design", John Wiley, New Delhi, 2000.

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MIDDLEWARE TECHNOLOGIES

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UNIT I INTRODUCTION (9)

Software Components – objects – fundamental properties of Component technology – modules – interfaces – callbacks – directory services – component architecture – components and middleware.

UNIT II JAVA COMPONENT TECHNOLOGIES (9)

Threads – Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI and RMI-IIOP.

UNIT III CORBA TECHNOLOGIES (9)

Java and CORBA – Interface Definition language – Object Request Broker – system object model – portable object adapter – CORBA services – CORBA component model – containers – Application server – model driven architecture.

UNIT IV COM AND .NET TECHNOLOGIES (9)

COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – Active X controls – .NET components - assemblies – appdomains – contexts – reflection – remoting.

UNIT V COMPONENT FRAMEWORKS AND DEVELOPMENT (9)

Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component framework – directory objects – cross-development environment – component-oriented programming – Component design and implementation tools – testing tools - assembly tools.

TOTAL: 45

REFERENCES:

1. Clemens Szyperski, “Component Software: Beyond Object-Oriented Programming”, Addison Wesley, 2nd Edition 2002.
2. Ed Roman, “Enterprise Java Beans”, 3rd Edition, Wiley, 2004.
3. Andreas Vogel, Keith Duddy, “Java Programming with CORBA”, John Wiley & Sons 1998
4. Corry, Mayfield, Cadman, “COM/DCOM Primer Plus”, Tec media, 1st Edition, 1999

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ARCHITECTURE OF UNIX & WINDOWS

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UNIT I INTRODUCTION TO UNIX

(9)

Introduction- The file system-Shell programming- Filters- Communication and Scheduling- File system commands- System Administration.

UNIT II DESIGN ASPECTS OF UNIX

(9)

Architecture of UNIX OS ,UNIX Kernel, Kernel data structures- The buffer Cache- Internal Representation of files- The structure of Processor- Process control-Network communication.

UNIT III INTRODUCTION TO WINDOWS

(9)

Introduction-Operating System as resource manager, Multitasking, Multithreading, Monolithic & Microkernel Architecture, Client-server Model, Windows NT-client server Architecture.

UNIT IV PROCESS & THREADS

(9)

Process address space, process objects, thread objects, synchronization of threads, process structure, windows NT implementation of process & threads, Object Model Operating Systems Architecture: Executive Object, Object management, Object protection, Windows NT object implementation.

UNIT V VIRTUAL MEMORY MANAGEMENT & KERNAL

(9)

Virtual memory Management: Virtual memory, Memory sharing, Memory Protection, Virtual memory implementation of window NT. Kernel Functions: Context switching & Scheduling, Interrupt and Exception handling, Kernel features of windows/NT operating systems. I/O Systems: Object model, Uniform driver model, Asynchronous operation, I/O processing, Layered driver model,

TOTAL : 45

REFERENCES:

1. Sumicarl Das, "UNIX Concepts & Application:., Tata Mc Graw Hill ,2nd edition, New Delhi, 2000.
2. Jeny peek, Grace Todino, "Learning the Unix Operating System", O' Reily Publications, 5th edition, New Delhi, 2001.
3. Charlie Russel, Sharon Crawford, " Microsoft Windows XP Professional Resource Kit", Microsoft, 3rd edition New Delhi, 2005.
4. Shelley O'Hara, "Easy Microsoft Windows XP, Tata Mc Graw Hill, 4th edition, New Delhi, 2006.

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ADVANCED COMPUTER ARCHITECTURE

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UNIT I INTRODUCTION (9)

Basics of architectural classification-Flynn's, Feng's, Handler's, Shore classification-Data flow Vs control flow-Uniform memory access-Non uniform memory access.

UNIT II MEMORY ORGANIZATION (9)

Memory hierarchy-Optimization-Virtual memory-Memory management schemes-Cache memory-Performance evaluation and enhancement.

UNIT III PIPELINING & VECTOR PROCESSING (9)

Principles of pipelining-Instruction-Arithmetic pipeline-Internal forwarding and short circuiting-Hazard detection and resolution. Vector Processing - Requirements-Issues-Vectorization and optimization methods.

UNIT IV RISC COMPUTING (9)

RISC Architecture-Instruction execution charts-Register file-register optimization-RISC pipelining-RISC vs CISC.

UNIT V SUPERSCALAR PROCESSORS (9)

Overview-design issues-Case study: Pentium processor, AMD architecture.

TOTAL : 45

REFERENCES:

1. Kai Hwang and Feye A Briggs, "Computer Architecture and Parallel Processing", McGraw Hill, 2nd edition, Singapore, 2004.
2. William Stallings, "Computer Organization and Architecture", PHI/ Pearson Education, 6th edition, New Delhi, 2004.
3. Hennessey and Patterson, " Computer Architecture, a Quantitative Approach", Harcourt India Private Limited, 1st edition, USA, 2002
4. Andrew S Tanenbaum, "Structured Computer Organization", Pearson Education Asia, 4th Edition, New Delhi, 2003.

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NETWROK PROTOCOLS

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UNIT I INTRODUCTION (9)

Internetworking concepts and architectural model- classful Internet address – CIDR-Subnetting and Supernetting –ARP- RARP- IP – IP Routing –ICMP – Ipv6

UNIT II TCP (9)

Services – header – connection establishment and termination- interactive data flow- bulk data flow- timeout and retransmission – persist timer - keepalive timer- futures and performance

UNIT III IP IMPLEMENTATION (9)

IP global software organization – routing table- routing algorithms-fragmentation and reassembly- error processing (ICMP) –Multicast Processing (IGMP)

UNIT IV TCP IMPLEMENTATION I (9)

Data structure and input processing – transmission control blocks- segment format- comparison-finite state machine implementation-Output processing- mutual exclusion-computing the TCP data length

UNIT V TCP IMPLEMENTATION II (9)

Timers-events and messages- timer process- deleting and inserting timer event- flow control and adaptive retransmission-congestion avoidance and control – urgent data processing and push function.

TOTAL : 45

REFERENCES:

1. Douglas E.Comer – “Internetworking with TCP/IP Principles, Protocols and Architecture”, Vol. 1 & 2 fourth edition, Pearson Education Asia, 2003
2. W.Richard Stevens “TCP/IP illustrated” Volume 1 Pearson Education, 2003
3. Forouzan, “ TCP/IP protocol suite”, 2nd edition, TMH, 2003
4. W.Richard Stevens “TCP/IP illustrated” Volume 2 Pearson Education 2003.