

**Sri Chandrasekharendra Saraswathi Viswa
Mahavidyalaya**

[University]
Enathur, Kanchipuram - 631 561.



M.E. COMPUTER SCIENCE
SYLLABUS

**CHOICE BASED CREDIT SYSTEM FOR M.E(CS) FULL-TIME / PART TIME
MODE PROGRAMME**

ELIGIBILITY

Candidates for the admission to the first year course leading to the degree of M.E(CS) will be required to possess:

1. A pass in B.E / B.Tech degree examination in Computer Science and Engineering (or) Information Technology (or) Electrical and Electronics Engineering (or) Electronics and Instrumentation (or) Electronics and Communication Engineering with atleast 50% of marks. (or)
2. A pass in M.Sc in Computer Science or Information Technology with atleast 50% of marks. (or)
3. A pass in M.C.A with atleast 50% of marks.

CREDITS

Each course is normally assigned one credit per lecture per week and one credit for two periods of tutorials or part thereof for laboratory or practical per week.

Each semester curriculum shall normally have a blend of theory and practical courses. The Total credits for the entire degree course will be 80. For the award of the degree a student has to earn a minimum of 80 credits.

DURATION OF THE PROGRAMME

A student is normally expected to complete M.E(CS) programme in two years in the case of full time and three years for part time mode. But in any case not more than four years for full time and five years for part time mode from the time of admission.

REGISTRATION FOR COURSES

A newly admitted student will automatically be registered for all the courses prescribed for the first semester, without any option.

Every other student shall submit a completed registration form indicating the list of courses intended to be credited during the next semester. This registration will be done a week before the last working day of the current semester. Late registration with the approval of the dean on the recommendation of the head of the department along with a late fee will be done, up to the last working day.

ASSESSMENT

The break-up of assessment and examination marks for theory subjects is as follows.

First Assessment (Test)	:	15 Marks
Second Assessment (Test)	:	15 Marks
Assignment	:	10 Marks
Examination	:	60 Marks

The break-up of the assessment and examination marks for practical is as follows.

First Assessment (test)	:	15 Marks
Second Assessment (test)	:	15 Marks
Maintenance of record book	:	10 Marks
Examination	:	60 Marks

The project work will be carried out in the final semester in two phases first phase in pre final semester and second phase in final semester. The project work will be assessed for 40 marks by a committee consisting of the guide and a minimum of two members nominated by the head of the department. The head of the department may himself be a member or the chairman. 60 marks are allotted for the project work and viva voce examination at the end of the final semester.

STUDENT COUNSELLOR

To help the students in planning their course of study and for general advice on the academic programme, the head of the department will attach a certain number of students to a member of the faculty who shall function as student counsellor for those students throughout their period of study. Such student counsellors shall advise the students, give preliminary approval for the courses to be taken by the students during each semester and obtain the final approval of the head of the department.

CLASS COMMITTEE

For each semester separate class committee will be constituted by the head of the department. The composition of the class committee will be as follows.

Course co-ordinators of the entire course shall be appointed by the head of the department from among the staff members teaching the course.

A project co-ordinator shall be appointed by the head of the department from among the project supervisors.

Teaching staff of other individual courses

One professor or reader, preferably not teaching the concerned class, appointed by the head of the department.

The head of the department may opt to be a member or the chairman.

All student counsellors of the class, and the head of the department (if not already a member) or any staff member nominated by the head of the department may opt to be special invitees.

The class committee shall meet three times during the semester

The first meeting will be held within two weeks from the date of class commencement in which type of assessment like test, assignment etc for the first and second assessments and the dates of completion of the assessments will be decided.

The second meeting will be held within a week after the completion of the first assessment to review the performance and for follow-up action.

The second meeting will be held within a week after the second assessment is completed to review the performance and for follow-up action.

The third meeting will be held after all the assessments are completed for all the courses, and at least one week before the commencement of the examinations. During this meeting the assessment on a maximum of 40 marks will be finalised for every student and tabulated and submitted to the head of the department for approval and transmission to the controller of examinations.

WITHDRAWAL FROM A COURSE

A student can withdraw from a course at any time before a date fixed by the head of the department prior to the second assessment, with the approval of the dean of the faculty on the recommendation of the head of the department.

TEMPORARY BREAK OF STUDY

A student can take a one-time temporary break of study covering the current year / semester and / or the next semester with the approval of the dean on the recommendation of the head of the department, not later than seven days after the completion of the mid-semester test. However, the student must complete the entire programme within the maximum period of four years for part time mode and five years for part time mode .

SUBSTITUTE ASSESMENT

A student who has missed, for genuine reasons accepted by the head of the department, one or more of the assessments of a course other than the examination, may take a substitute assessment for any one of the missed assessments. The substitute assessment must be completed before the date of the third meeting of the respective class committees.

A student who wishes to have a substitute assessment for a missed assessment must apply to the head of the department within a week from the date of the missed assessment.

ATTENDANCE REQUIREMENTS

To be eligible to appear for the examination in a particular course, a student must put in a minimum of 80% of attendance in the course. However, if the attendance is 70% or above but less than 80% in any course, the authorities can permit the student to appear for the examination in the course on payment of the prescribed condonation fee.

A student who withdraws from or does not meet the minimum attendance requirement in course must re-register for and repeat the course.

PASSING AND DECLARATION OF EXAMINATION RESULTS

All assessments of all the courses on the absolute mark basis will be considered and pass by the results passing board in accordance with the rules of the university. Thereafter, the controller of examinations shall convert the marks for each courses to the corresponding letter grade as follows, compute the grade point average and cumulative grade point average, and prepare the grade cards.

90 to 100 marks	-	Grade 'S'
80 to 89 marks	-	Grade 'A'
70 to 79 marks	-	Grade 'B'
60 to 69 marks	-	Grade 'C'
55 to 59 marks	-	Grade 'D'
50 to 54 marks	-	Grade 'E'
less than 50 marks	-	Grade 'F'
Insufficient attendance	-	Grade 'I'
Withdrawn from the course	-	Grade 'W'

A student who obtains less than 50 marks out of 100 in the subject or is absent for the examination will be awarded Grade 'F'.

A student who earns a grade of S,A,B,C,D or E for a course is declared to have successfully completed that course and earned the credits for that course. Such a course cannot be repeated by the student.

A student who obtains letter grade F in a course has to reappear for the examination in that course.

A student who obtains letter grade I or W in a course has to re-register for and repeat the course.

The following grade points are associated with each letter grade for calculating the grade point average.

S – 10; A-9; B-8; C-7; D-6; E-5; F-0

Course with grades I and W are not considered for calculation of grade point average or cumulative grade point average. F Grade will be considered for computing GPA and CGPA.

A student can apply for retotalling of one or more of his examination answer papers within a week from the date of issue of grade sheet to the student on payment of the prescribed fee per paper. The application must be made to the controller of examinations with the recommendation of the head of the department.

After results are declared, grade cards will be issued to the students. The grade card will contain the list of courses registered during the semester, the grades scored and the grade point average(GPA) for the year/semester.

GPA is sum of the products of the number of credits of a course with the grade point scored in that course, taken over all the courses for the Semester , divided by the sum of the number of credits for all courses taken in that semester. CGPA is similarly calculated considering all the courses taken from the time of admission.

After successful completion of the programme, the degree will be awarded with the following classification based on CGPA.

For First Class with Distinction the student must earn a minimum of 80 credits within two years for full time mode and three years for part time mode from the time of admission, pass all the courses in the first attempt and obtain a CGPA of 8.25 or above.

For First Class the student must earn a minimum of 80 credits within three years for full time mode and four years for part time mode from the time of admission and obtain a CGPA of 6.5 or above.

For Second Class the student must earn a minimum of 80 credits within four years for full time mode and five years for part time mode from the time of admission

ELECTIVES

Apart from the various elective courses offered in the curriculum of the branch of specialisation, a student can choose electives from any specialisation under the faculty during the entire period of study, with the approval of the head of the department offering the course. Some of the electives have lab components along with theory and hence have more credits than the electives which are only theoretical.

**COURSE CONTENTS AND SCHEME OF EXAMINATION
FOR FULL TIME MODE**

I SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMC1FT091	Mathematical Foundation for Computer Science	3	1	0	3	40	60	100	4
EMC1AT092	Advanced Software Engineering	3	0	0	3	40	60	100	3
EMC1AT093	Distributed Operating System	3	1	0	3	40	60	100	4
EMC1AT094	Advanced Data Communication & Computer Networks	3	1	0	3	40	60	100	4
EMC1AT095	Advanced Data Structures & Algorithms	3	1	0	3	40	60	100	4
EMC1AP096	Data Structures & Algorithms Lab (Using C++)	0	0	6	3	40	60	100	3
									22

II SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMC2AT091	Internet Programming & Tools	3	1	0	3	40	60	100	4
EMC2AT092	Parallel Computer Architecture	3	1	0	3	40	60	100	4
EMC2AT093	Agent Based Intelligent Systems	3	0	0	3	40	60	100	3
EMC2AE094	Elective – I	3	1	0	3	40	60	100	4
EMC2AE095	Elective – II	3	1	0	3	40	60	100	4
EMC2AP096	Internet Programming & Tools Lab	0	0	6	3	40	60	100	3
	Minimum requirement								22

L – Lecture Credits T – Tutorial Credits P - Practical Credits C- Total Credits

III SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMC3AT091	Software Project Management System	3	1	0	3	40	60	100	4
EMC3AT092	Mobile Computing	3	1	0	3	40	60	100	4
EMC3AT093	Object Oriented Analysis & Design	3	1	0	3	40	60	100	4
EMC3AE094	Elective – III	3	1	0	3	40	60	100	4
EMC3AE095	Elective – IV	3	1	0	3	40	60	100	4
	Project Work Phase – I	-	-	-	-	-	-	-	-
	Minimum requirement								20

Electives:

Some of the electives have lab components along with theory and hence have 5 credits (Lecture - 3 Tutorial - 0 Lab - 4 and Total 5 credits) and the electives which are only theoretical have 4 credits. (Lecture - 3 Tutorial - 1 Lab - 0 and Total 4 credits)

IV SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMC4AP096	Project Work Phase – II	-	--	--	--	40	60	100	16

L – Lecture Credits T – Tutorial Credits P - Practical Credits C- Total Credits

**COURSE CONTENTS AND SCHEME OF EXAMINATION
FOR PART TIME MODE**

I SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMPC1FT091	Mathematical Foundation for Computer Science	3	1	0	3	40	60	100	4
EMPC1AT092	Advanced Software Engineering	3	0	0	3	40	60	100	3
EMPC1AT093	Distributed Operating System	3	1	0	3	40	60	100	4
									11

II SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMPC2AT091	Advanced Data Communication & Computer Networks	3	1	0	3	40	60	100	4
EMPC2AT092	Advanced Data Structures & Algorithms	3	1	0	3	40	60	100	4
EMPC2AT093	Parallel Computer Architecture	3	1	0	3	40	60	100	4
EMPC2AP094	Data Structures & Algorithms Lab (Using C++)	0	0	6	3	40	60	100	3
									15

III SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMPC3AT091	Internet Programming & Tools	3	1	0	3	40	60	100	4
EMPC3AT092	Agent Based Intelligent Systems	3	0	0	3	40	60	100	3
EMPC3ET093	Elective – I	3	1	0	3	40	60	100	4
	Minimum requirement								11

L – Lecture Credits T – Tutorial Credits P - Practical Credits C- Total Credits

IV SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMPC4AT091	Software Project Management System	3	1	0	3	40	60	100	4
EMPC4AT092	Mobile Computing	3	1	0	3	40	60	100	4
EMPC4AE093	Elective – II	3	1	0	3	40	60	100	4
EMPC4AP094	Internet Programming & Tools Lab	0	0	6	3	40	60	100	3
	Minimum requirement								15

V SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMPC5AT091	Object Oriented Analysis & Design	3	1	0	3	40	60	100	4
EMPC5AE092	Elective - III	3	1	0	3	40	60	100	4
EMPC5AE093	Elective – IV	3	1	0	3	40	60	100	4
	Project Work Phase – I	-	-	-	-	-	-	-	-
	Minimum requirement								12

Electives:

Some of the electives have lab components along with theory and hence have 5 credits (Lecture - 3 Tutorial - 0 Lab - 4 and Total 5 credits) and the electives which are only theoretical have 4 credits. (Lecture - 3 Tutorial - 1 Lab - 0 and Total 4 credits)

VI SEMESTER

Sub.Code	Subject	L	T	P	Duration of Exam (Hours)	Maximum Marks			C
						I	E	Total	
EMCP6AP094	Project Work Phase - II	-	-	-	-	40	60	100	16
									16

L – Lecture Credits T – Tutorial Credits P - Practical Credits C- Total Credits

SEMESTER – I

MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE

3 1 0 4

UNIT – I LOGIC

Statements – Connectives – Truth Tables – Normal forms – Predicate calculus – Inference – Theory for Statement Calculus and Predicate Calculus – automata theorem proving.

UNIT – II COMBINATORICS

Review of Permutation and Combination - Mathematical Induction - Pigeon hole principle - Principle of Inclusion and Exclusion - generating function - Recurrence relations.

UNIT – III ALGEBRAIC STRUCTURES

Semi group - Monoid - Groups(Definition and Examples only) Cyclic group - Permutation group(S_n and D_n) - Substructures - Homomorphism of semi group, monoid and groups - Cosets and Lagrange Theorem – Normal Subgroups - Rings and Fields (Definition and examples only)

UNIT – IV RECURSIVE FUNCTIONS

Recursive functions - Primitive recursive functions - computable and non - computable functions.

UNIT – V LATTICES

Partial order relation, poset - Lattices, Hasse diagram - Boolean algebra

TEXT BOOK

Gersting J.L., Mathematical Structure for Computer Science, 3rd Edition W.H. Freeman and Co., 1993.

REFERENCES

1. Lidl and Pitz., Applied Abstract Algebra, Springer - Verlag, New York, 1984.
2. K.H. Rosen, Discrete Mathematics and its Applications, Mc-Graw Hill Book Company, 1999.
3. <http://www.mhhe.com/rosen>.

ADVANCED SOFTWARE ENGINEERING

3 0 0 3

UNIT – I INTRODUCTION

Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - planning - Risk analysis - Software project scheduling.

UNIT – II REQUIREMENTS ANALYSIS

Prototyping - Specification - Analysis modeling

UNIT – III SOFTWARE DESIGN

Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

UNIT – IV USER INTERFACE DESIGN AND REAL TIME SYSTEMS

User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards. Programming languages and coding - Language classes – Code documentation - Code efficiency - Software Configuration Management.

UNIT –V SOFTWARE QUALITY AND TESTING

Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Software Maintenance - Reverse Engineering and Re-engineering. CASE tools - projects management, tools - analysis and design tools - programming tools - integration and testing tool - Case studies.

TEXT BOOK

1. I. Sommerville, Software Engineering, V edition: Addison Wesley, 1996.

REFERENCES

1. Roger Pressman.S., Software Engineering : A Practitioner's Approach, (4th Edition), McGraw Hill, 1997.
2. Pfleeger, Software Engineering, Prentice Hall, 1999.
3. Carlo Ghezzi, Mehdi Jazayari, Dino Mandrioli Fundamentals of Software Engineering, Prentice Hall of India 1991.

DISTRIBUTED OPERATING SYSTEMS

3 1 0 4

UNIT I - OVERVIEW OF OPERATING SYSTEMS

Introduction – overview of operating system concepts – Process management and Scheduling , Memory management : partitioning, paging, segmentation, virtual memory, Device and File management.

UNIT II - DISTRIBUTED COMPUTING

Introduction - Distributed Systems – Hardware and Software concepts – Design issues; Communication in Distributed systems : Layered protocols - ATM networks - Client Server model – Remote Procedure Calls.

UNIT III - SYNCHRONIZATION AND PROCESSES

Synchronization : Clock synchronization – Mutual exclusion – Election algorithms, - Atomic transactions – Deadlocks; Processes : Threads – System models – processor allocation – Scheduling – Fault tolerance – Real time distributed systems.

UNIT IV - SHARED MEMORY AND FILE SYSTEMS

Shared memory : Consistency models – Page based distributed shared memory – Shared variables – Object based distributed shared memory; Distributed File Systems : Design and Implementation.

UNIT V - CASE STUDY – AMOEBA

Introduction to Amoeba – Object and Capabilities – memory management – Communication – Amoeba Servers.

TEXT BOOK

1. Andrew S Tanenbaum , “ Distributed Operating Systems “ , Pearson Education India, 2001.

REFERENCES

1. Mukesh Singhal, Niranjana G Shivratri , “ Advanced Concepts in Operating Systems”, McGraw Hill International, 1994.
2. Pradeep K Sinha , “ Distributed Operating Systems Concepts and Design “, PHI, 2002.

ADVANCED DATA COMMUNICATION AND COMPUTER NETWORKS

3 1 0 4

UNIT – I

Data communication – Components – protocol and standards - line configuration – Topologies – Transmission mode – Categories of networks – OSI Model – TCP/IP protocol Model – Application protocol and TCP/IP utilities – Error deduction and correction.

UNIT – II

Encoding and Decoding Technique – Transmission media – Performance – Channelization – FDMA, TDMA, CDMA – Peer to peer protocol Other Adaptation Function – Data link Controls.

UNIT – III

LAN Standards – Ethernet and IEEE802.3 LAN Standards – Token Ring and IEEE802.5 LAN standards – FDDI – Wireless LAN and IEEE 802.11 Standards – LAN Bridges – Packet Network Topology – Routing and packet networks – Shortest path Algorithms.

UNIT – IV

ATM networks – Traffic management and QOS – Congestion Control – TCP/IP Architecture – The Internet protocols – Ipv6 – UDP – TCP – DHCP and Mobile IP – Internet Routing Protocol – Multicasting Routing.

UNIT – V

Advanced Network Architecture – IP Forwarding Architecture – Overlay Models – MPLS – RVSP – Differentiated Service – Security Protocol – Security and Cryptographic Algorithm – Security Protocols Cryptography Algorithm

TEXT BOOK

1. Data Communication and Networking By Vehrouz A.Forouzan – Second Edition.

REFERENCES

1. Communication Network – Fundamental concepts and key Architecture BY Leon Garcia and Widjaja.

ADVANCED DATA STRUCTURES AND ALGORITHMS

3 1 0 4

UNIT - I INTRODUCTION

Growth – of functions summations – formulas and properties, Recurrences

UNIT – II SORTING

Heap sort – Quick sort – radix sort – bucket sort, Analysis of sort techniques.

UNIT – III DATA STRUCTURE

Arrays – linked lists – stacks – queues, representation of sets, has tables, binary search trees, red-black trees, splay trees.

UNIT – IV ALGORITHMS & ANALYSIS

Dynamic programming, Greedy algorithms, Introduction to parallel algorithms, Amortized analysis, String matching algorithms, the native – the Rabin karp.

UNIT – V ADVANCED DATA STRUCTURE

B-Trees, Binomial heaps Fibonacci heaps. GRAPH ALGORITHMS: Graphics: Representation – BFS – DFS – Topological Sort – Connected Components – Minimum spanning tree – Kruskal's algorithm – Prims algorithm – Dijkstra's algorithm – Floyd's algorithm – bellman ford algorithm.

TEXT BOOK

1. Introduction to algorithms – Thomas H.Coreman, Charless E.Leiserson, Ronald L.Rivest 2002, PHI.

REFERENCES

1. A.V.Aho, J.E.Hopcroft and J.D.Ullamn, Design and analysis of computer algorithms, 1974, Addison Wesli.
2. Computer Algorithms and Introduction to Design & analysis – Sara baase, Allenran Gelda, 2000, Pearson.
3. Data structures algorithm and application in C++ - Sahni, 2000.

DATA STRUCTURES LABORATORY

1. Implementation of Singly ,Doubly and Circular linked list .
2. Implementation of Multistack in a Single Array.
3. Implementation of Circular Queue.
4. Implementation of Binary Search trees.
5. Implementation of Hash table.
6. Implementation of Heaps.
7. Implementation of AVL Rotations.
8. Implementation of Breadth First Search Techniques.
9. Implementation of Depth First Search Techniques.
10. Implementation of Prim's Algorithm.
11. Implementation of Dijkstra's Algorithm.
12. Implementation of Kruskal's Algorithm
13. Implementation of Searching Techniques
14. Implementation of Sorting Techniques

SEMESTER – II

INTERNET PROGRAMMING AND TOOLS

3 1 0 4

UNIT I BASIC INTERNET CONCEPTS

History of internet-Internet addressing-TCP/IP-DNS and directory services-Internet Applications-Electronic mail, New groups UUCP, FTP, Telnet, Finger.

UNIT II WORLD WIDE WEB

Overview – Hyper text markup language- Uniform Resource Locators-Protocols-M Browsers-Plug-Ins-Net meeting and Chat-Search engines.

UNIT III SCRIPTING LANGUAGES

Java Script Programming-Dynamic HTML-Cascading style sheets-Object model and Event model- Filters and Transitions-Active X Controls-Multimedia-Client side scri.

UNIT IV SERVER SIDE PROGRAMMING

Introduction to Java Servlets – overview and architecture – Handling HTTP get & post request – session Tracking – Multi-tier application - Implicit objects – Scripting – Standard actions – Directives – Custom Tag libraries

UNIT V CASE STUDY – AMOEBA

Connecting to Databases – JDBC principles – Database access – XML – Introduction – Structuring Data – XML Namespaces – XML vocabularies – Web server.

TEXT BOOK

1. Deital and Deital, Goldberg, “Internet & World Wide Web, How To Program”, third edition, Pearson Education, 2004

REFERENCES

1. Jame Jaworski, “Java unleashed”, SAMS Techmedia Publications, 1999
2. Naughton , Herbert Schildt , “Java2, Complete Reference”, 4th edition, TMH,2000
3. Deital & Deital, “Java How to program”, Prentice hall 2000
4. Gary Cornell, Cay S.Horstmann, Core Java Vol.1 and Vol.2, Sun Microsystems
5. Ted coombs, Jason coombs , Brewer, “ Active X source book”, John wiley

PARALLEL COMPUTER ARCHITECTURE

3 1 0 4

UNIT – I

Parallel computer models: Multiprocessors and multiprocessors and multi computer – Multi vector and SIMD computer, conditions of parallelism, System interconnect architectures performance. Metrics and measures.

UNIT - II

Advanced processor technology – Super scalar and vector processors – Memory hierarchy technology, virtual memory technology – cache memory organization – shared – memory organization.

UNIT – III

Linear pipeline processors - Nonlinear pipeline processors – Instruction pipeline design Arithmetic pipeline design – Superscalar pipeline design.

UNIT – IV

Multiprocessor system interconnects – Cache coherence, Vector processing principle

Compound Vector processing, SIMD computer organization, multiprocessor operating system, multiprocessor examples.

UNIT – V

Latency – hiding techniques – Principles of Multithreading, Scalable and Multithreaded architectures. Dataflow computer, static data flow computer, Dynamic data flow computers.

TEXT BOOK

1. Kai Hwang, “Advanced Computer Architecture”, Parallelism, Scalability, Programmability, McGraw Hill, 1993.

REFERENCE

1. Hwang Briggs, “Computer Architecture and parallel processing”, McGraw hill
2. William Stallings, “Computer Organization and Architecture – Designing for performance”, PHI, 2000

AGENT BASED INTELLIGENT SYSTEMS

3 0 0 3

UNIT – I INTRODUCTION

Definitions - History - Intelligent Agents - Structure-Environment - Basic Problem Solving Agents- Formulating - Search Strategies - Intelligent search - Game playing as search.

UNIT – II KNOWLEDGE BASED AGENTS

Representation - Logic-First order logic - Reflex Agent - Building a knowledge Base - General Ontology - Inference - Logical Recovery.

UNIT – III PLANNING AGENTS

Situational Calculus - Representation of Planning - Partial order Planning- Practical Planners – Conditional Planning - Replanting Agents.

UNIT – IV AGENTS AND UNCERTAINTY

Acting under uncertainty - Probability Bayes Rule and use - Belief Networks - Utility Theory - Decision Network- Value of Information - Decision Theoretic Agent Design.

UNIT – V HIGHER LEVEL AGENTS

Learning agents - General Model - Inductive Learning - Learning Decision Trees- Reinforcement Learning - Knowledge in Learning - Communicative agents -Types of Communicating agents - Future of AI.

REFERENCES

1. Stuart Russell and Peter Norvig Artificial Intelligence - A Modern Approach, Prentice Hall, 1995.
2. Patrick Henry Winston, Artificial Intelligence, 3rd Edition, AW, 1999.
3. Nils.J.Nilsson, Principles of Artificial Intelligence, Narosa Publishing House, 1992.

Implementing Java components Practicing RMI, JDBC, JSP Multithreading and animation concepts

1. Exercises on creating HTML pages
2. Implementation of Package Bio-Data
3. Shapes Class Hierarchy
4. Animation using Java Applets
5. Multi Threaded implementation of Producer Consumer Problem
6. Implementation of simple TCP/IP Client and server
7. Operations on Employee table using JDBC
8. Bubble sort implementation using RMI
9. Constructing a simple database using XML
10. An interactive Web application in JSP
11. Using cookies to track users in browsers from the web servers
12. Constructing a secured FTP client – server application

SEMESTER – III

SOFTWARE PROJECT MANAGEMENT

3 1 0 4

UNIT I

Introduction-software projects-various type of projects-problems with software projects-an overview of project planning –project evaluation-project analysis and technical planning –software estimation.

UNIT II

Activity planning-project schedules-sequencing and scheduling projects-network planning model-shortening project duration identifying critical activities

UNIT III

Risk Management-resource allocation-monitoring and control- managing people and organizing teams-planning for small projects

UNIT IV

Software Configuration Management – basic functions-responsibilities-standards-configuration management-prototyping models of prototyping.

UNIT V

Case Study – PRINCE project management.

TEXT BOOK

1. Darel Ince,H.Sharp and M.Woodman,”Introduction to Software Project Management and Quality Assurance “, Tata McGraw Hill.

REFERENCES

1. Mike Cotterell,Bob Hughes , “Software Project Management “, Inclusion/Thomas Computer Press,1995.

MOBILE COMPUTING

3 1 0 4

UNIT – I INTRODUCTION

Medium Access Control – Introduction to Telecommunication and Satellite Systems – broadcast Systems.

UNIT – II WIRELESS LAN

Infrared Vs radio transmission – IEEE 802.11 – HIPERLAN – Bluetooth.

UNIT – III WIRELESS ATM

Reference model – functions – Radio Access Layer – handover – Location management.

UNIT – IV MOBILE NETWORKS AND TRANSPORT LAYER

Mobile IP – Dynamic Host Configuration protocol – Ad hoc Networks – Traditional TCP – Indirect TCP – Snooping TCP – mobile TCP – Fast recovery – timeout freezing. Selective retransmission – Transaction Oriented TCP

UNIT – V SUPPORT FOR MOBILITY

File systems – WWW – Wireless Application protocol – Security – Analysis of existing wireless networks.

TEXT BOOK

1. Mobile Communications – Jochen Schiller, Pearson Education.
2. William C.Y.Lee, Mobil Communication Design Fundamentals.

REFERENCES

1. <http://www.bluetooth.com>

OBJECT ORIENTED ANALYSIS & DESIGN

3 1 0 4

UNIT – I OBJECT ORIENTED DESIGN FUNDAMENTALS

The object Model - Classes and Objects - Complexity - Classification - Notation - Process - Pragmatics – Binary and entity relationship - object types - object state - OOSD life cycle.

UNIT – II OBJECT ORIENTED ANALYSIS

Overview of object oriented analysis - Shaler/Mellor, Coad/ Yourdon, Rumbaugh, Booch - UML - Usecase - Conceptual model - behaviour - class - analysis patterns -overview - diagrams -aggregation.

UNIT – III OBJECT ORIENTED DESIGN METHODS

UML - diagrams - collaboration - Sequence - Class - design patterns and frameworks - comparison with other design methods.

UNIT – IV MANAGING OBJECT ORIENTED DEVELOPMENT

Managing analysis and design - Evaluation testing - coding - Maintenance - Metrics.

UNIT V CASE STUDIES IN OBJECT ORIENTED DEVELOPMENT

Design of Foundation class libraries - Object Oriented Databases - Client/Server Computing - Middleware.

TEXT BOOK

1. Ali Bahrami, Object Oriented System Development, Mc Graw Hill International Edition, 1999.

REFERENCES

1. Craig Larman, Applying UML and patterns, Addison Wesley, 2000.
2. Grady Booch, James Rumbaugh, Ivar Jacobson, The Unified Modeling Language User Guide, Addison - Wesley Longman, 1999, ISBN 0-201-57 168 -4.
3. Fowler, Analysis Patterns, Addison Wesley, 1994.
4. Erich Gamma, Design Patterns, Addison Wesley, 1994.

SEMESTER – IV

PROJECT PHASE – I & II

The student is supposed to carry out a project in two phases the first phase in pre final semester. The student has to do the analysis and design part in phase – I and produce a documentation of the design with the details up to System Planning and Design. In Phase – II the System Implementation has to be carried out and the Complete project report has to be submitted with the following details.

1.Introduction

- 1.1 Abstract
- 1.2 About the organization
- 1.3 Existing system
- 1.4 Drawbacks of the existing system
- 1.5 Proposed system

2.System Requirements

- 2.1 Selection of software and language
- 2.2 Selection of hardware

3.System Planning and Design

- 3.1 Overall System Design structure
- 3.2 Data Flow diagram
- 3.3 Process design
- 3.4 Database design

4. System implementation

- 4.1 Methodology used for Testing
- 4.2 System implementation

5 User Manual

- 1.1 Screen Shots
- 1.2 Reports

6. Conclusion

Scope for further development and Conclusion

7. Bibliography

Appendix
Sample Coding

ELECTIVES

List of Electives

S.No	Subject	L	T	P	C
1.	Neural Networks.	3	1	0	4
2.	Multimedia System	3	1	0	4
3.	Mobile Networking	3	1	0	4
4.	Component Based System Design	3	1	0	4
5.	Discrete Mathematics	3	1	0	4
6.	Data Mining and Warehousing	3	1	0	4
7.	Software Quality Management	3	1	0	4
8.	Management Information System	3	1	0	4
9.	Network Security	3	1	0	4
10.	Computer Graphics	3	1	0	4
11.	Grid Computing	3	1	0	4
12.	E-Commerce	3	1	0	4
13.	Natural Language Processing	3	1	0	4
14.	TCP/IP Technology	3	1	0	4
15.	Advanced Database Management System	3	1	0	4
16.	Artificial Intelligence	3	1	0	4
17.	Xml And Web Services	3	0	4	5
18.	.NET Technologies	3	0	4	5
19.	Open Source Computing (LAMP)	3	0	4	5

NEURAL NETWORKS

UNIT – I BACK PROPAGATION

Introduction to Artificial Neural Systems - Perceptron - Representation - Linear reparability - Learning – Training algorithm - The back propagation network - The generalized delta rule - Practical considerations – BPN applications.

UNIT – II STATISTICAL METHODS

Hopfield nets - Cauchy training - Simulated annealing - The Boltzmann machine. Associative memory - Bidirectional associative memory - Applications.

UNIT – III COUNTER PROPAGATION NETWORK AND SELF ORGANIZING MAPS

CPN building blocks - CPN data processing. SOM data processing - Applications.

UNIT IV - ADAPTIVE RESONANCE THEORY AND SPATIO TEMPORAL PATTERN CLASSIFICATION

ART network description - ART1 - ART2 - Application. The formal avalanche - Architecture of spatio temporal networks - The sequential competitive avalanche field - Applications of STNs.

UNIT – V NEO – CONGNITRON

Cognitron - Structure & training - The neocognitron architecture - Data processing - Performance - Addition of lateral inhibition and feedback to the neocognitron. Optical neural networks - Holographic correlators.

TEXT BOOK

1. James Freeman A. and David Skapura M., Neural Networks - Algorithms, Applications & Programming Techniques Addison Wesley, 1992.
2. Yegnanarayana B., Artificial Neural Networks, Prentice Hall of India Private Ltd., New Delhi, 1999.

MULTIMEDIA SYSTEM

UNIT – I INTRODUCTION

Multimedia applications - System architecture - Objects of Multimedia Systems - Multimedia databases.

UNIT – II COMPRESSION AND FILE FORMATS

Types of compression - Image compression - CCITT - JPEG - Video image compression - MPEG-DVI Technology - Audio compression - RTF format - TIFF file format - RIFF file format - MIDI - JPEG DIB - TWAIN.

UNIT – III INPUT/OUTPUT TECHNOLOGIES

Traditional devices - Pen input - Video display systems - Scanners - Digital audio - Video images and animation.

UNIT – IV STORAGE AND RETRIEVAL

Magnetic Media - RAID - Optical media - CD-ROM - WORM - Juke box - Cache management.

UNIT – V APPLICATION DESIGN

Application classes - Types of systems - Virtual reality design - Components - Databases - Authoring Systems - Hyper media - User interface design - Display/Playback issues - Hypermedia linking and embedding.

TEXT BOOK

1. Andleigh PK and Thakrar K, Multimedia Systems Design, Prentice Hall, 1996.

REFERENCES

1. Vaughan T, Multimedia, Tata McGraw Hill, 1999.
2. Koegel Buford JFK, Multimedia Systems, Addison Wesley Longman, 1999.
3. Mark J.B., Sandra K.M., Multimedia Applications Development using DVI technology, McGraw Hill, 1992.

MOBILE NETWORKING

UNIT - I INTRODUCTION

Medium Access Control – Introduction to Telecommunication and Satellite systems – Broadcast systems.

UNIT - II WIRELESS LAN

Infrared Vs radio transmission – IEEE 802.11 – HIPERLAN Bluetooth.

UNIT - III WIRELESS ATM

Reference model – functions Radio Access Layer – Handover – Location management.

UNIT - IV MOBILE NETWORK AND TRANSPORT LAYER

Mobile IP – Dynamic Host Configuration protocol – Ad hoc Networks – Traditional TCP – Indirect TCP – Snooping TCP - mobile TCP – Fast recovery – timeout freezing. Selective retransmission – Transaction Oriented TCP.

UNIT - V SUPPORT FOR MOBILITY

File Systems – WWW – Wireless Application protocol – Security – Analysis of existing wireless networks.

TEXT BOOK

1. Mobile Communications – Jochen Schiller, Pearson Education.
2. William C.Y.Lee, Mobile Communication Design Fundamentals.

REFERENCES

1. <http://www.bluetooth.com>

COMPONENT BASED SYSTEM DESIGN

UNIT - I BASIC COMPONENTS

Software Components – COM / DCOM – Java Beans – Enterprise Java Beans – CORBA – Distributed Object – Request and Response – Remote Reference – IDL Interface – Proxy - Marshalling

UNIT - II BASIC PATTERNS and INHERENT ISSUES

Factory – Broker – Garbage Collection on the Client and Server – Persistence of Remote Reference – Transactions – Concurrency in the Server Object – Applying Client / Server Relation Recursively – Event Driven Programming

UNIT - III CORBA OVERVIEW

Benefits of Java Programming with CORBA, CORBA Overview – OMG, OMA, Object Model, ORB Structure, OMG IDL, ORB and Object Interface, POQ, Language Mapping, Interoperability, DII and DSI, IR

UNIT - IV JAVA PROGRAMMING WITH CORBA

Overview of Java ORBs – First Java ORB Application – OMG IDL to Java Mapping – ORB Run – Time System Discovering Service (naming Trading) – Building Applications – Advance Feature (DSI, DII, Interface Depository) CORBA Events

UNIT - V COM OVERVIEW

COM – Distributed COM – COM Facilities and Services – Applying COM Objects – COM Interface, Query Interface, Reference Counting – Dynamic Linking - Class

TEXT BOOK:

1. Java Programming with CORBA 3rd Edition Gerald Brose, Andreas Vogel, Keith Duddy. Wiley Dratech India Pvt Ltd,.
2. Inside COM, Dale Rogerson Microsoft Press

DISCRETE MATHEMATICS

UNIT I MATHEMATICAL LOGIC

Propositions and Logical operators – Truth tables and propositions generated by a set – Equivalence and Implication – Tautologies – Laws of logic – Proofs in Propositional calculus – Direct proofs – Conditional conclusions – Indirect proofs – Propositions over a universe – Mathematical Induction – The existential and universal quantifiers – Predicate calculus including theory of inference.

UNIT II SET THEORY

Laws of Set theory – Partition of a set – Minsets – The duality principle – Relations – Graphs of relations – Hasse diagram – Matrices of relations – Closure operations on relations – Warshall's algorithm – Functions – Combinatorics.

UNIT III RECURRENCE RELATION & ALGEBRAIC SYSTEMS

Recurrence relations – Solving a recurrence relation – Recurrence relations obtained from solutions – Generating functions – Solution of a recurrence relation using generating functions – Closed form expression for generating function.

Groups – Cyclic groups and subgroups – Normal subgroups – Coding theory – Group codes.

UNIT IV GRAPH THEORY

Basic concepts – Data structures for graphs – Connectivity – Traversals graph optimization – The traveling salesman problem and networks and the maximum flow problem – Trees – Spanning Trees – Rooted trees – Binary Trees – Kruskal's algorithm – Traversals of Binary trees.

UNIT V BOOLEAN ALGEBRA & FORMAL LANGUAGES

Boolean algebra – Posets – Lattices – Application of Boolean Algebra to switching theory. Languages – Recognition and generation - Phase structure grammars and languages – Finite state Machine – Recognition in regular languages

TEXT BOOK

1. Alan Doerr and Kenneth Levasseur, “Applied Discrete Structures for Computer Science”, Galgotia Publications (P) Ltd.(**Unit I** – Chapter 3 Section 3.1 – 3.8, **Unit II** – Chapter 2, Chapter 4 Section 4.2 – 4.5, Chapter 6 Section 6.1, 6.2, 6.4, 6.5, Chapter 7, **Unit III** – Chapter 8 Section 8.3, 8.4 Chapter 11 Section 11.25 Chapter 15 Section 15.1, 15.2, 15.4 15.5, **UnitIV** – Chapter 9, Section 9.1 – 9.5, Chapter 10 Section 10.1 – 10.5, **Unit V** – Chapter 13 Section 13.1–13.3, 13.7, Chapter 14 Section 14.2, 14.3)

REFERENCES

1. Tremblay J.P. and Manohar R., “Discrete Mathematical Structures with applications to Computer Science”, Tata Mc Graw Hill Publishing Co.,2000.
2. Venkataraman M.K., etal. “Discrete Mathematics”, National Publishing Co.
3. Seymour Lipschutz, Marc Lars Lipson, “Discrete Mathematics”, Mc Graw Hill Inc., 1992.
4. Kolman and Busby, “Discrete Mathematical Structures for Computer Science”, 1987.
5. Iyengar N.Ch.S.N. etal,” Discrete Mathematics”, Vikas Publishing Ltd.
6. Sundaresan V. etal. “Discrete Mathematics”, A.R. Publications.
7. Solairaju etal. “Discrete Mathematics”, Anuradha Publications.

DATA MINING AND WAREHOUSING

UNIT I

DATA WAREHOUSE:

Evolution of Data base Technology – Definition: Data Warehouse - Differences between Operational Data base systems and Data Warehouses - Multidimensional Data Model - OLAP Operations - Warehouse Schema - Data Warehousing Architecture - Warehouse Server – Metadata - OLAP engine - The tasks in Building a Data Warehouse - Data warehouse backend Process – Data warehouse applications

UNIT II

DATA MINING:

Data mining: Definition - Knowledge discovery in database (KDD) vs. Data mining - DBMS vs DM - Data mining – on what kind of data? -Other Related Areas - Data mining Tasks - Classification – Clustering – prediction – Association rules – Time series Analysis – Sequence Discovery – Regression - Architecture of a typical Data Mining System - Data mining Techniques – Decision Trees – Neural Networks – Genetic Algorithms – Hypothesis Testing.

UNIT III

DATA MINING QUERY LANGUAGE AND ARCHITECTURE:

Data Mining Query Language - Other data mining Languages and the standardization of data mining primitives - Four Generations of Data Mining Systems - Architectures of Data Mining Systems.

UNIT IV

WEB MINING

Web Mining - Web Content Mining – Web structure mining – Web Usage mining

UNIT V

APPLICATION ,PRODUCT AND CASE STUDIES

Data warehousing and mining Applications - Products - Case studies - The Future of Data Mining - Privacy and Security of Data Mining

TEXT BOOK

- 1.J.Han,M.Kamber , “Data Mining: Concepts and Techniques”, Academic Press, Morgan Kanf man Publishers, 2001.
2. Morgrat A. Dunham , “ Introduction to Data Mining techniques”, Pearson Education

REFERENCES

1. Arun K Pujari ,” Data mining” , Andhra University Press
2. C.S.R. Prabhu , “Data Ware housing: Concepts, Techniques, Products and Applications”, Prentice Hall of India, 2001.
3. W.H.Inmon, “ Building the Data Warehouse” , 3rd Edition, Wiley Dreamtech ‘02.
4. Sam Anabory & Dennis Murray , “Data Warehousing in the real world”, Addisson Wesley, 1997.
5. Amitesh Sinha, “Data Ware Housing “ , Thomson Asia, 2002.
6. W.H.Inmon, “ Building the DataWarehouse” , 3rd Edition, Wiley Dreamtech ‘02.
7. Sam Anabory & Dennis Murray , “Data Warehousing in the real world”, Addisson Wesley, 1997.

Note: Algorithm Not Included

SOFTWARE QUALITY MANAGEMENT SYSTEM

UNIT I INTRODUCTION

Concepts of Quality Control, Quality Assurance, Quality Management - Total Quality Management; Cost of Quality; QC tools - 7 QC Tools and Modern Tools; Other related topics - Business Process Re-engineering - Zero Defect, Six Sigma, Quality Function Deployment, Benchmarking, Statistical process control.

UNIT II SOFTWARE ENGINEERING PRINCIPLES

Software Engineering Principles, Software Project Management, Software Process, Project and Product Metrics, Risk Management.

UNIT III SOFTWARE QUALITY ASSURANCE MODELS

Software Quality Assurance; Statistical Quality Assurance - Software Reliability, Models for Quality Assurance-ISO-9000 - Series, CMM, SPICE, Malcolm Baldrige Award.

UNIT IV SOFTWARE PROCESSES & TESTING

Software Process - Definition and implementation; internal Auditing and Assessments; Software testing - Concepts, Tools, Reviews, Inspections & Walkthroughs; P-CMM.

UNIT V TQM

Total Quality Management – Introduction, Software reuse for TQM , Software testing method for TQM, Defect Prevention and Total Quality Management, Zero Defect Software Development, Clean room Engineering.

TEXT BOOK

1. Watt.S. Humphery, " Managing Software Process ", Addison - Wesley, 1998.
2. Allan Gillies ,”Software quality Theory & Management “, Thomson international Press 1997. (Unit I & II)

REFERENCES

1. Roger Pressman, " Software Engineering ", 5th edition McGraw Hill, 1999.
2. G.Gordan Schulmeyer , James , “Total Quality Management for Software”, International Thomson Computer Press, 1998.
3. Philip B Crosby, " Quality is Free: The Art of Making Quality Certain ", 1992.
4. Brian hambling ,”Managing Software Quality” , Mc Graw Hill.

MANAGEMENT INFORMATION SYSTEM

UNIT I

Definition of MIS- Data Processing , Decision Support Systems – Information Resources Management , End user Computing Managerial Accounting , OR Management theory Sub Systems of MIS.

Data Base Query Languages, Report generators , Statistical Packages , Modeling Languages , V.H.L Language. Batch system, On Line system.

Communication systems, Front End Processors, LAN , WAN , Distributed Systems.

UNIT II

Logical Data Concepts , Sequencing of Data , Types of Files , Data Bases .Serial Access and Direct Access devices.

Sequential , Hashed and indexed File Organization – Data Base Organization – single flat File – Hierarchical , Network, Relational DB Structures. Transaction Processing – Control and Retrieval .

Word and Text Processing . Document Filing Computer Graphics , Composition and Reproduction , Document Distribution , Fascimille Transmission , Message Systems , Information Processing Control- Availability Controls.

UNIT III

Decision Making Process – Problem Formulation _ programmed Vs Non Programmed Decision – Criteria for Decision Making , Classical Economical Model – Administrative Model – Resolution of Conflict – Uncertainty Avoidance – Problematic Search – Incremental Decision Making – optimization Techniques under certainty – Pay off Matrices – Decision Trees – Games Theory – Statistical Inference – documenting and Communicating Decision rules – Support for Decision making phases.

UNIT IV

Definition of Information – Redundancy – Sending and Receiving efficiency – utility of information – Errors and Bias -Value of Information and Sensitivity Analysis - Information system design.

Types of system – Subsystem- Preventing System entropy – System Stress – Organizational efficiency and effectiveness

Use of subsystems in information System Design – Decoupling of information systems – Project Management.

UNIT V - 15

Hierarchy of planning – planning models – Computational support for planning – organizational structure Implementations and Management Theory in System Design – Decision Support systems and Expert systems – Computational support of intelligence , Design and Choice Phases – Spread sheet Processor – Analysis package- Model Generator – Planning Software System – Data Base Query Systems for planning.

Total Periods : 75

TEXT BOOK

1. Gordon B. Davis And Maggrethe H . Olson , Management Information Systems , Mc Graw Hill International Edition - Second Edition , 1998

REFERENCES

1. Rober G . Mudrick , Joel E . Ross And James R . CIAGGET , Information Systems For Modern Management , 33rd Edition , 1992 , Prentice Hall Of India (P) Ltd ., Eastern Economy Edition.
2. Jerome Kanter , Management Information Systems , 3rd Edition , 1990 . Prentice Hall Of India Ltd. , Eastern Economy Edition .

NETWORK SECURITY

UNIT – I INTRODUCTION

Attacks, Services, and Mechanisms – Conventional Encryption model – Classical and Modern techniques – Encryption Algorithms – Confidentiality

UNIT – II PUBLIC KEY ENCRYPTION

RSA algorithm – Elliptic Curve Cryptography – Diffie Hellman Key exchange – Number theory concepts – Message authentication & hashing – Hash & Mac algorithm – Digital signatures – Authentication Protocols.

UNIT III NETWORK SECURITY PRACTICES

Electronic Mail Security - Pretty Good. Privacy, S/MIME, IP Security - IP Security Architecture, Combining Security. Association, Key Management.

UNIT IV WEB SECURITY

Web Security - Web Security Requirements, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction. Network Management Security – Basic concepts of SNMP, SNMP v1 Community facility SNPM v3.

UNIT V SYSTEM SECURITY

System Security: Intruders, Viruses and Related Threats. Fire walls Firewall Design Principles, Trusted Systems.

TEXT BOOK

1. William Stallings “Cryptography and Network Security”, Second edition, PHI, New Delhi, 1999

REFERENCES

1. Bruce, Schneider, Applied Cryptography, 2nd edition, Toha Wiley & Sons, 1996.
2. Douglas R.Stinson, Cryptography – Theory and Practice, CRC Press, 1995.

COMPUTER GRAPHICS

UNIT – I

Introduction to computer graphics - Input and output devices - Video monitors - Raster and Random scan display and systems.

Output primitives - Line and circle drawing algorithms - Polygon filling algorithms

UNIT – II

Two-dimensional transformation – Clipping and windowing – Clipping algorithms – Line clipping, Polygon Clipping, Curve clipping and Text clipping.

Three dimensional concepts – 3D transformations

UNIT – III

Three-dimensional object representation – Polygonal representations, Spline representation, Bezier Curves and surfaces – Quadtree and Octrees.

3D – Viewing – Parallel and Perspective Viewing

UNIT – IV

View volumes- 3D clipping – Hidden – surface and Hidden-line elimination.

Illumination and shading- Gouraud and Phong shading

UNIT – V

Color models and applications-RGB, YIQ, CMY, HSV, HLS and CIE models.

Computer Animation.

TEXT BOOK

1. DONALD HEARN and PAULINE BAKER, Computer Graphics, C version - Printice Hall New Delhi, 1997.

REFERENCES

1. ROY A. PLASTOCK, and GORDEN KELLEY, Theory and Problems of Computer Graphics, Schaum's outline series Tata McGraw Hill .
2. STEVEN HARRINGTON, Computer Graphics, A Programming Approach, Mc Graw Hill.
3. NEWMANN W.M. and SPROULL. R.F. "Principles of Interactive Computer Graphics", Second Edition, Tata McGraw Hill Publishing Company Ltd.

GRID COMPUTING

UNIT I INTRODUCTION

Grid Computing values and risks – History of Grid computing – Grid computing model and protocols – overview of types of Grids

UNIT II TYPES OF GRIDS

Desktop Grids : Background – Definition – Challenges – Technology – Suitability – Grid server and practical uses; Clusters and Cluster Grids; HPC Grids; Scientific in sight – application and Architecture – HPC application development environment and HPC Grids; Data Grids; Alternatives to Data Grid – Data Grid architecture.

UNIT III ARCHITECTURE AND MANAGEMENT

The open Grid services Architecture – Analogy – Evolution – Overview – Building on the OGSA platform – implementing OGSA based Grids – Creating and Managing services – Services and the Grid – Service Discovery – Tools and Toolkits – Universal Description Discovery and Integration (UDDI)

UNIT IV NATIVE PROGRAMMING AND SOFTWARE APPLICATIONS

Desktop supercomputing – parallel computing – parallel programming paradigms – problems of current parallel programming paradigms – Desktop supercomputing programming paradigms – parallelizing existing applications – Grid enabling software applications – Needs of the Grid users – methods of Grid deployment – Requirements for Grid enabling software – Grid enabling software applications.

UNIT V APPLICATIONS , SERVICES AND ENVIRONMENTS

Application integration – application classification – Grid requirements – Integrating applications with Middleware platforms – Grid enabling Network services – managing Grid environments – Managing Grids – Management reporting – Monitoring – Data catalogs and replica management – portals – Different application areas of Grid computing.

TEXT BOOK

1. Ahmar Abbas, “ Grid Computing , A Practical Guide to Technology and Applications”, Firewall media , 2004.

REFERENCES

1. Joshy Joseph , Craig Fellenstein , “Grid Computing”, Pearson Education , 2004.
2. Foster , “Grid Blue print foe new computing”.

E-COMMERCE

UNIT I INTRODUCTION

Infrastructure for Electronic Commerce - Networks - Packet Switched Networks - TCP/IP Internet protocol - Domain name Services - Web Service Protocols - Internet applications - Utility programs - Markup Languages - Web Clients and Servers - Intranets and Extranets - Virtual private Network.

UNIT II CORE TECHNOLOGY

Electronic Commerce Models - Shopping Cart Technology - Data Mining - Intelligent Agents – Internet Marketing - XML and E-Commerce.

UNIT III ELECTRONIC PAYMENT SYSTEMS

Real world Payment Systems - Electronic Funds Transfer - Digital Payment - Internet Payment Systems – Micro Payments - Credit Card Transactions - Case Studies.

UNIT IV SECURITY

Threats to Network Security - Public Key Cryptography - Secured Sockets Layer - Secure Electronic Transaction - Network Security Solutions - Firewalls.

UNIT V INTER/INTRA ORGANIZATIONS ELECTRONIC COMMERCE

EDI - EDI application in business - legal, Security and Privacy issues - EDI and Electronic commerce - Standards - Internal Information Systems - Macro forces - Internal commerce - Workflow Automation and Coordination - Customization and Internal commerce - Supply chain Management.

TEXT BOOK

1. Ravi Kalakota and Andrew B Whinston , Frontiers of Electronic commerce, AddisonWesley, 1996

REFERENCES

1. Pete Loshin, Paul A Murphy , Electronic Commerce, II Edition , Jaico Publishers1996.
2. David Whiteley, e - Commerce : Strategy, Technologies and Applications - McGraw Hill, 2000.

NATURAL LANGUAGE PROCESSING

UNIT I INTRODUCTION

Introduction to NLP – Computational Models of Language – Organization of NLP Systems

UNIT II PARSING

Syntax – Linguistic Background – Elements of Simple Sentences – Parsing Techniques – Features and Augmented Grammars – Deterministic Parsing.

UNIT III SEMANTICS

Semantic – Logical Form – Case Relations – Semantic Networks – Basic Operations for Semantic Interpretation – Strategic and Issues.

UNIT IV KNOWLEDGE REPRESENTATION

Context & World Knowledge – Knowledge Representation – Question – Answering Systems – Natural Language Generation – Typical NLP Systems and their Architectures – Cognitive Aspects of Natural Languages

UNIT V CASE STUDY

Indian Language Processing – Approach to Machine Translation – Typical Case Studies

TEXT BOOK

1. James Allen – “Natural Language Understanding “, Pearson Education, 2004

REFERENCES

1. Ronald Hausser “ Foundations of Computational Linguistics”, Springer- Verlog, 1999.
2. Winograd , “ Language as a cognitive process- syntax” , Addison Wesley.
3. Popov , “ Talking with computer in Natural language” springer verlog,1986.
4. Akshar Bharathi, Vineet Chaitanya, Rajeev Sangal , “Natural Language Processing – A Paninian Perspective” , PHI , 2000

TCP/IP TECHNOLOGY

UNIT I INTRODUCTION

Protocols and standards – OSI model – TCP / IP protocol suite – addressing – versions – underlying technologies.

UNIT II IP ADDRESSES, ROUTING, ARP AND RARP

Classful addressing – other issues – subnetting – supernetting – classless addressing – routing methods – delivery – table and modules – CIDR – ARP package – RARP.

UNIT III IP, ICMP, TGMP AND UDP

Datagram – fragmentation – options – checksum – IP package – ICMP – messages, formats – error reporting – query – checksum – ICMP package – IGMP – messages, operation – encapsulation – IGMP package – UDP – datagram – checksum – operation – uses – UDP package.

UNIT IV TCP, UNICAST AND MULTICAST ROUTING PROTOCOLS

Services – flow, congestion and error control – TCP package and operation – state transition diagram – unicast routing protocols – RIP – OSPF – BGP – multicast routing – trees – protocols – MOSPF – CBT – PIM

UNIT V APPLICATION LAYER, SOCKETS

Client server model – concurrency – processes – sockets – byte ordering – socket system calls – TCP and UDP client-server programs – BOOTP -DHCP – DNS – name space, resolution – types of records – concept – mode of operation – Rlogin.

TEXT BOOK

1. Behrouz Forouzan, “TCP/IP protocol suite “, 2nd edition, Tata McGrawhill..

REFERENCES

1. Douglas Comer, “Internetworking with TCP / IP” ,Vol – 1, PHI, 2000.

ADVANCED DATABASE MANAGEMENT SYSTEM

UNIT I BASIC CONCEPTS

Basic Concepts : Databases and Database users – Database system concepts and architecture – Data modeling using Entity Relationship model – Generalization and specialization – Record storage and file organizations- Index structures for files.

UNIT II

The Relational Data Model, Relation Constraints, and the relational algebra – SQL – The Relational Database Standard – ER to Relational mapping – Network Data Model – Basic concepts – Retrieval, Update and set processing facilities – Hierarchical Data Model – Basic Concepts – Retrieval and update facilities – virtual records.

UNIT III

Relational Database Design – Functional dependencies and normalization for relational database – Query processing and optimization – concurrency control – Transaction processing – Database recovery techniques.

UNIT IV

Distributed Database – Types of Distributed Database Systems – Query processing in Distributed Database – Client Server architecture and its relationship to Distributed Database.

UNIT V

DATA WAREHOUSE AND DATA MINING

Evolution of Data base Technology – Definition: Data Warehouse - Differences between Operational Data base systems and Data Warehouses - Multidimensional Data Model - OLAP Operations - Warehouse Schema - Data Warehousing Architecture - Warehouse Server – Metadata - OLAP engine - The tasks in Building a Data Warehouse - Data warehouse backend Process – Data warehouse applications

Data mining: Definition - Knowledge discovery in database (KDD) vs. Data mining - DBMS vs DM - Data mining Tasks - Classification – Clustering – prediction – Association rules – Time series Analysis – Sequence Discovery – Regression - Architecture of a typical Data Mining System - Data mining Techniques – Decision Trees – Neural Networks – Genetic Algorithms – Hypothesis Testing.

TEXT BOOK

1. ELMASRI & NAVATHE – Fundamental of Database Systems – 3rd Edition, 2nd Reprint, Addison Wesley, 2000

REFERENCES

1. KORTH and SILBERSCHATZ, Database system concepts – Tata McGraw Hill
2. Morgrat A. Dunham , “ Introduction to Data Mining techniques”, Pearson Education

ARTIFICIAL INTELLIGENCE

UNIT I

ARTIFICIAL INTELLIGENCE -

Some Applications of AI - Production Systems and AI-Different types of Production Systems-Search Strategies for AI-Backtracking-Graph-search, Ununiformed and Heuristic Graph-Search Procedures-Related Algorithms-Applications.

UNIT II

INTRODUCTION TO NEURAL COMPUTING

Differences between Human Brain and ANN - Knowledge Based Information Processing - Neural Information Processing - Hybrid Intelligence - Basic Concepts of Neural Networks - Inference and Learning - Classification, Association, Optimization and Self-Organization Models-Learning-Supervised And Unsupervised.

UNIT III

FUZZY SYSTEMS

Crisp sets and Fuzzy sets - Notion of Fuzzy Sets - Basic Concepts - Operations on Fuzzy sets-Uncertainty and Information - Types of Uncertainty -Principles of Uncertainty and Information -Applications.

UNIT IV

NEURO - FUZZY SYSTEMS

Introduction to Neuro - Fuzzy Systems -Fuzzy System Design Procedures - Fuzzy Sets and Logic Background - Fuzzy/ ANN Design and Implementation.

UNIT V

GENETIC ALGORITHMS

Introduction - Robustness of Traditional Optimization and Search Techniques-The goals of optimization-Computer Implementation-Applications.

TEXT BOOK

1. Limin Fu, "Neural Network in computer intelligence", McGraw - Hill International Editions, 1994
2. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw – Hill

REFERENCES

1. Nils J.Nilsson, "Principles of Artificial Intelligence", Narosa Publishing House.,1980
2. Elaine Rich and Kelvin knight, "Artificial Intelligence", McGraw - Hill Edition.1991
3. David E. Goldberg, "Genetic Algorithms - In Search, optimization and Machine Learning", Pearson Education
4. George.J.Klin/ Bo Yuan, "Fuzzy Systems & Fuzzy Logic - Theory and Applications", Prentice, Hall of India, 1995

XML AND WEB SERVICES

UNIT - I FUNDAMENTALS

Introduction to the web - Web- enabling Technologies - Web service Protocol - Web Design concepts -Examining good and bad web design - Page Design Resources.

UNIT - II SIMPLE DESIGN ISSUES

Page Design - HTML - Web page style considerations - Page composition - Type faces - Tag parameters – Color and graphics for web pages - WYSIWYG web page editor - Dreamweaver.

UNIT - III ADVANCE DESIGN ISSUED

Advanced Page design - tables and frames - preparing graphics and animations forms - cascading style sheets -user interface design - page grid - page templates - usability testing.

UNIT - IV SCRIPTING IN DESIGN

Typography and Graphic design for the web - Creating transparent GIF - Lean graphics - Image maps – Palette map - Web programming - Web site Garage - W3C HTML validation services - Net mechanic - DHTML -XML.

UNIT - V TOOLS AND APPLICATIONS

Online Applications - Developing an on-line shopping application - Data Base design issues - connecting Data Base with tools such as Java, ASP, Cold Fusion- Designing Portals and Vortals.

TEXT BOOK

- 1 Deitel and Deitel, Internet and World Wide Web how to program, Prentice Hall, 2000.
- 2 Bob Breed Love, Web Programming Unleashed, Sams net Publications, 1996.
- 3 DHTML `O' Reiley Publications, 2000.

.NET TECHNOLOGIES

UNIT-I

Introduction about the Framework of .NET-Introduction to Visual Basic .NET. -Visual Studio Integrated Development Environment, Creating windows, Forms

UNIT-II

Implementing OOPS in VB.NET-Introducing procedures and common Dialog Classes in VB.NET- Creating Menus and Working with MDI Application-Working With ADO.NET-Accessing and Manipulating Data-Performing Data Updates-Creating Reports-File I/O Operations-Exception Handling & Debugging.

UNIT-III

Introduction to ASP.NET-Building Web Forms using Server Controls- Data Binding in ASP.NET-Using Web Services and COM Components-Error Handling and Debugging-State Management and Accessibility Configuring-Securing Web Applications

UNIT-IV

Introduction to C#. NET-Creating simple C# programs-Working With Classes, methods-Programming with Forms and controls-Control Statements-Using types in C#.

UNIT-V

Programming with Exception handling and interface-Arrays and Collections-Properties and Indexers-Writing a Multithreaded application-Deploying the Applications of ASP.NET, VB.NET, C#. NET

TEXT BOOK

1. Beginning Asp.net 1.1 with Visual C#.Net. Chris Ullman, John Kauffman, Chris Hart, Dave Sussman, Daniel Maharry (Wrox Publications)
2. ASP.NET Bible by Mridula Parihar and et al.

OPEN SOURCE COMPUTING (LAMP)

UNIT-I

Introduction to Web Technologies – Introduction to Linux, Apache, PHP, MySQL – Installation and configuration of Apache and MySQL servers

UNIT-II

PHP – Embedding PHP in HTML – Calling Functions – Accessing Form Variables – Data Types in PHP- Operators- Control Structures

UNIT-III

Creation and manipulation of Single & Multidimensional Arrays – String manipulation and regular expressions – Writing functions and code reuse – Implementing Object Oriented Concepts in PHP - File processing

UNIT-IV

Introduction to web database architecture – Creating and working with databases in MySQL – Accessing MySQL Databases from the web with PHP

UNIT-V

Advanced MySQL issues including Securing databases – Session Control in PHP – Project creation using PHP and MySQL

TEXT BOOK

1. PHP and MySQL Web Development by Luke Welling and Laura Thomson