

UNIT – I: CALCULUS OF VARIATION

9

Introduction - Euler's equation – several dependent variables Lagrange's equation of Dynamics – Integrals involving derivatives higher than the first – Problem with Constraints – Direct methods and Eigen value problems.

UNIT – II: MATRIX THEORY

9

Eigen value using OR transformations – generalized eigen vectors – canonical forms Singular value decomposition and applications – pseudo inverse – least square Approximations.

UNIT – III: LINEAR PROGRAMMING PROBLEM

9

Graphical method – simplex method – Big M technique – Integer programming.

UNIT – IV: LOGIC

9

Statement – Connectives – Truth tables – Normal forms – Predicate Calculus – Inference – Theory of statement. Calculus and Predicate Calculus – Automata Theorem proving.

UNIT – V : COMBINATORICS AND RECURSIVE FUNCTIONS

9

Review of permutation and Combination – Mathematical Induction – Pigeon hole Principle of inclusion and exclusion – Generating function – Recurrence relation. Recursive functions – primitive Recursive functions.

REFERENCES

1. Gupta, A.S, Calculus of Variations with Applications, Prentice – Hall of India New Delhi 1997.
2. Bronson.R."Matrix Operation" Schaums Outline Series, Mc Graw Hill, Newyork,1989.
3. Taha H.A, "Operation Research – An Introduction ", Prentice hall of India, 2001
4. Kenneth H. Rosen, "Discrete Mathematics and its Applications", TMH, 1999.

UNIT I FUNDAMENTALS OF COMPUTER DESIGN

9

Measuring and Reporting performance - Quantitative principles of computer Design - Classifying instruction set Architecture - Memory addressing - Addressing modes - Type and size of operands - Operations in the instruction set - Operands and operations for media and signal processing - Instructions for control flow - Encoding an instruction set - Example Architecture - MIPS and TM32.

UNIT II INSTRUCTION LEVEL PARALLELISM

9

Pipelining and Hazards - Concepts of ILP - Dynamic scheduling - Dynamic Hardware prediction - Multiple issues - Hardware based speculation - Limitations of ILP - Case studies: IP6 Microarchitecture

UNIT III INSTRUCTION LEVEL PARALLELISM WITH SOFTWARE**APPROACHES**

9

Compiler techniques for exposing ILP - Static branch prediction - Static multiple issue : VLIW - Advanced compiler support - Hardware support for exposing parallelism - Hardware Vs software speculation. Mechanism - IA 64 and Itanium Processor.

UNIT IV MEMORY AND I/O

9

Cache performance - Reducing cache miss penalty and miss rate - Reducing hit time - Main memory and performance - Memory technology. Types of storage devices - Buses - RAID - Reliability, availability and dependability - I/O performance measures - Designing I/O system.

UNIT V MULTIPROCESSORS AND THREAD LEVEL PARALLELISM

9

Symmetric and distributed shared memory architectures - Performance issues - Synchronization - Models of memory consistency - Multithreading.

L-45 T-15 Total - 60

TEXTBOOK

1. John L. Hennessey and David A. Patterson, "Computer Architecture: A Quantitative Approach", Third Edition, Morgan Kaufmann, 2003.

REFERENCES

1. D. Sima, T. Fountain and P. Kacsuk, "Advanced Computer Architectures: A Design Space Approach", Addison Wesley, 2000.
2. Kai Hwang "Advanced computer architecture Parallelism Scalability Programmability" Tata Mcgraw Hill Edition 2001.
3. Vincent P. Heuring, Harry F. Jordan, "Computer System Design and Architecture", Addison Wesley, 2nd Edition 2004.

UNIT I INTRODUCTION	8
Basic concepts of OOPs – Templates – Algorithm Analysis – ADT - List (Singly, Doubly and Circular) Implementation - Array, Pointer, Cursor Implementation	
UNIT II BASIC DATA STRUCTURES	11
Stacks and Queues – ADT, Implementation and Applications - Trees – General, Binary, Binary Search, Expression Search, AVL, Splay, B-Trees – Implementations - Tree Traversals.	
UNIT III ADVANCED DATA STRUCTURES	10
Set – Implementation – Basic operations on set – Priority Queue – Implementation - Graphs – Directed Graphs – Shortest Path Problem - Undirected Graph - Spanning Trees – Graph Traversals	
UNIT IV MEMORY MANAGEMENT	7
Issues - Managing Equal Sized Blocks - Garbage Collection Algorithms for Equal Sized Blocks - Storage Allocation for Objects with Mixed Sizes - Buddy Systems - Storage Compaction	
UNIT V SEARCHING, SORTING AND DESIGN TECHNIQUES	9
Searching Techniques, Sorting – Internal Sorting – Bubble Sort, Insertion Sort, Quick Sort, Heap Sort, Bin Sort, Radix Sort – External Sorting – Merge Sort, Multi-way Merge Sort, Polyphase Sorting - Design Techniques - Divide and Conquer - Dynamic Programming - Greedy Algorithm – Backtracking - Local Search Algorithms	

Total No. of Periods : 45

TEXTBOOKS

1. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++", Pearson Education, 2002.
2. Aho, Hopcroft, Ullman, "Data Structures and Algorithms", Pearson Education, 2002.

REFERENCES

1. Horowitz, Sahni, Rajasekaran, "Computer Algorithms", Galgotia, 2000
2. Tanenbaum A.S., Langram Y, Augestien M.J., "Data Structures using C & C++", Prentice Hall of India, 2002

UNIT I INTRODUCTION

7

Main frame Systems, Desktop Systems – Multiprocessor Systems – Distributed Systems
- Clustered Systems – Real Time systems – Hand held Systems, Operating Systems
Structures: System Components – Operating System Services - System calls - System
Programs – System Design and Implementation - CPU scheduling: Basic Concepts –
Scheduling Algorithms.

UNIT II PROCESS MANAGEMENT

11

Process Concepts - Process Scheduling - Operation on Process - Co-Operating process -
Inter Process Communication - Threads: Multithreading Models - Process
Synchronization: The Critical Section Problem – Synchronization Hardware -
Semaphores – classical problem of Synchronization – Monitors - Deadlock: Deadlock
Characterization - Methods for handling Deadlocks - Deadlock Prevention – Deadlock
Avoidance - Deadlock Detection – Recovery from Deadlock.

UNIT III MEMORY MANAGEMENT

9

Background – Swapping - Contiguous Memory Allocation - Paging - Segmentation –
Segmentation with paging - Virtual Memory: Demand paging - Page Replacement -
Thrashing.

UNIT IV FILE SYSTEMS

9

File Concepts - Access methods - Directory Structure - File Protection - File System
Implementation: File System Structure and Implementation – Directory Implementation
– Allocation methods Free Space Management – Recovery - Disk Structure – Disk
Scheduling.

UNIT V DISTRIBUTED OPERATING SYSTEM

9

Design issues in distributed operating system-Distributed file systems - Naming and
Transparency-Remote File Access-Stateful versus Stateless service – Distributed
Coordination- Event Ordering-Mutual Exclusion- Atomicity- Concurrency Control-
Deadlock Handling-Election Algorithms-Case Study-Linux.

Total No. of Periods: 45

4

108CSPT04 - O.S

TEXTBOOKS

1. Silberschatz, Galvin, Gagne "Operating System Concepts" Sixth Edition, 2003
2. Pradeep K.Sinha, "Distributed OS concepts and Design", IEEE computer Society Press, PHI 1998.

REFERENCES

1. Andrew S. Tanenbaum, "Modern Operating Systems", PHI, 2nd Edition 2001
2. Achut S. Godbole and Kahate Atul, "Operating Systems & Systems Programming", Tata Mcgraw Hill, 2003.
3. Charles Crowley, "Operating systems: A Design Oriented Approach", Tata McGraw Hill, 1999.

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UNIT I

11

A Generic View Of Processes – Process Maturity – Process Models – Agile Process And Models – Software Cost Estimation – Risk Analysis – Software Project Planning & Scheduling.

UNIT II REQUIREMENT ANALYSIS

6

System Engineering Hierarchy – Requirement Engineering: Tasks, Initiating The Process, Eliciting Requirements, Developing Use Cases – Negotiating Requirements – Validating Requirements – Building The Analysis Models: Concepts – Object Oriented Analysis – Scenario Based Modeling – Data & Control Flow Oriented Model – Class Based Model – Behavioral Model.

UNIT III SOFTWARE DESIGN

8

Design Concepts – Design Models – Pattern Based Design – Architectural Design – Component Level Design – Class Based And Conventional Components Design – Real-time System Design - User Interface : Analysis And Design.

UNIT IV SOFTWARE TESTING

7

Software Testing – Strategies – Issues – Test Strategies For Conventional And Object Oriented Software – Validation And System Testing - Testing Tactics: White Box Testing, Basis Path Testing – Control Structure Testing – Black Box Testing - Object Oriented Testing – Testing GUI – Testing Client/Server – Test Documentation.

UNIT V SOFTWARE QUALITY ASSURANCE

13

Software Quality Concepts – Quality Assurance – Software Technical Reviews – Formal Approach To Software Quality Assurance - Reliability – Quality Standards – Software Quality Assurance Plan – Software Maintenance - Software Configuration Management – Reverse Engineering & Reengineering – Use of CASE Tools

L -45 T-15 Total - 60

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TEXTBOOKS

1. Roger S. Pressman., Software Engineering: A Practitioner's Approach (Sixth Edition), McGraw Hill, 2005.
2. I.Sommerville, Software Engineering, V Edition: Addison Wesley, 1996.

REFERNCES

1. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
2. James F Peters and Witold Pedryez, "Software Engineering - An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
3. Fairely, "Software Engineering Concepts", McGraw Hill, 1995

7

108CSPP01 DATA STRUCTURES LABORATORY

003100

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

108CSPP02 OPERATING SYSTEM LABORATORY

003100

1. Implement the following CPU Scheduling Algorithms.
i) FCFS ii) Round Robin iii) Shortest Job First .
2. Implement the Mutual Exclusion Problem Using Dekker's Algorithm.
3. Implement Inter Process Communication Problem (Producer-Consumer / Reader- Writer Problem) Using Semaphores.
4. Implement Best fit, First Fit Algorithm for Memory Management.
5. Implement Memory Allocation with Pages.
6. Implement FIFO page Replacement Algorithm.
7. Implement LRU page Replacement Algorithm.
8. Implement the creation of Shared memory Segment.
9. Implement File Locking.
10. Implement Banker's algorithm.

SEMESTER – II

208CSPT01 DATA BASE TECHNOLOGY

3 0 0 100

1. DATA BASE SYSTEM CONCEPT 10

File systems - Database systems - Database systems architecture - Data models - Relational model - Hierarchical model - Network model - Entity-Relationship model - Data Dictionary - Database Administration and control.

2. RELATIONAL DATABASES 9

Codd's rules - Base tables - Views - Domains and key concept - Integrity rules - Relational Algebra - Relational calculus - Commercial query languages - Embedded SQL - Normalization and database design.

3. DATABASE SYSTEM DESIGN 8

File and storage structures - Indexing and Hashing - Query processing - Database recovery - Concurrency control - Transaction processing - Security and Integrity - Triggers.

4. DISTRIBUTED DATABASES 9

Centralized versus distributed databases - Fragmentation - Distributed database architecture - Client / Server databases - Distributed transactions - Locking and Commit protocols - Distributed concurrency Control - Security and reliability - Parallel databases.

5. ADVANCED DATABASES 9

The World Wide Web - Object oriented database - Object Relational database - XML, XML/QL - Data Analysis and OLAP - Data mining - Data warehousing.

Total No of periods: 45

REFERENCES:

1. Abraham Silberschatz, Henry. F. Korth, S.Sudharsan, Database System Concepts, 4th Edition, Tata McGraw Hill, 2002.
2. Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems, 3rd Edition, Addison Wesley, 2004.
3. Jim Buyens, Step by Step Web Database Development, PHI, 2001.
4. Stefano Ceri & Gieseppe Pelagatti, Distributed Databases - Principles and Systems, McGraw Hill Book Company, 1987.
5. C.J.Date, "An Introduction to Database system", Pearson Education, 7th Edition, 2003

8

1. NETWORK ARCHITECTURE 9

Layering and protocols – OSI Architecture – Internet Architecture – Link and Medium Access protocols – Framing – Error Detection – reliable Transmission – IEEE 802 Standards – Ethernet – Token Rings – Wireless – Network Adapters.

2. NETWORK LAYER 9

Circuit Switching – Packet Switching – Switching and Forwarding – Bridges and LAN Switches – Cell Switching – Inter networking – Routing – Global Internet – Multicast.

3. TRANSPORT LAYER 9

UDP – TCP – Remote Procedure Call – Performance – Congestion Control and Resource Allocation – TCP Congestion Control – Congestion Avoidance Mechanisms – Quality of Service : Bandwidth – Delay – Jitter.

4. NETWORK SECURITY AND APPLICATION 9

Cryptographic Algorithms – DES – RSA – MD5 – Security Mechanisms – Fire Walls – Name Service – Traditional Applications – SMTP – HTTP – Multimedia Application – RTP – RTCP – SCTP .

5. NETWORK MANAGEMENT 9

Introduction – Network Monitoring – Network Control – SNMPV I Network Management Concepts – Information – Standard MIBS.

Total No of periods: 45

REFERENCES:

- 1: Larry L.Peterson and Brule S.Davie, "Computer Networks – A System Approach" MarGankangmann – Harcourt Asia, Second Edition, 2002 (Unit I, II, III & IV)
2. William Stallings, "SNMP, SNMP V2, SNMPV3, RMON 1 and 2", 3rd Edition. Addison Wesley, 6th Indian reprint 2002. (Unit V)
3. J.F Kurose and K.W. Ross, "Computer Networking –A top –down approach featuring the internet", Addison Wesley, 2001.
4. William Stallings, "Data & Computer Communication", 6th Edition, Pearson Education, 2002.
5. Mani Subramanian, "Network Management: Principles and Practice", Addison Wesley, 2000.

1. INTRODUCTION 9

Basic concepts - Grammar - Language - Parts of a compiler - Grouping of phases - Compiler construction tools.

2. LEXICAL ANALYZER 9

Role of a lexical analyzer - Input buffering - Specification and recognition of tokens - Finite automata - Regular expression to finite automation - Optimization of DFA-based pattern matchers-Use of a tool for generating lexical analyzer.

3. SYNTAX ANALYZER 9

Role of a parser - Context-free grammars - Top-down parsing - Bottom-up parsing - Use of a tool to generate parsers.

4. INTERMEDIATE CODE GENERATION 9

Intermediate languages - Declaration - Assignment statements - Boolean expressions - Flow control statements -Back patching.

5. CODE GENERATION 9

Introduction to optimization techniques - Issues in the design of a code generator - Run-time storage management - Design of a simple code generator.

Total No of periods: 45

REFERENCES:

1. A.V. Aho, Ravi Sethi, J.D. Ullman, Compilers - Principles, Techniques and Tools, Addison- Wesley, 1988.
2. Fischer Leblanc, Crafting Compiler, Benjamin Cummings, Menlo Park, 1988.
3. Kenneth C.Louden, Compiler Construction Principles and Practice, Vikas publishing House, 2003.
4. Allen I. Holub, Compiler Design in C, Prentice Hall of India, 2001.

1. OBJECT ORIENTED DESIGN FUNDAMENTALS 9

The Object Model – Classes And Objects - Complexity Of Software – Classification – Notation – Process – Pragmatics – Binary And Entity Relationship – Object Types – Object State – OOSD Life Cycle.

2. OBJECT ORIENTED METHODOLOGIES AND UML 9

Object Oriented Methodology: Rumbaugh, Booch, Jacobson, Shaler/Mellor, Coad/Yardon – Patterns – Frame Works – The Unified Approach – UML

3. OBJECT ORIENTED ANALYSIS 9

Identify Use Cases – Use Case Model – Documentation – Classification – Identifying Classes – Noun Phrases Approach – Common Class Pattern Approach – Use Case Driven Approach – Identifying Object Relationship, Attributes And Models.

4. OBJECT ORIENTED DESIGN 9

Design Process – Design Axioms – Designing Classes – Access Layer Design – View Layer Design.

5. MANAGING OBJECT ORIENTED DEVELOPMENT 9

Managing Analysis And Design – Evaluation Testing – Coding – Maintenance – Metrics – Case Study: Foundation Class Library – Client/Server Computing.

Total No. Of Periods: 45

REFERENCES:

1. Ali Bahrami, Object Oriented System Development, Mc Graw Hill International Edition, 1999.
2. Larman, Applying UML & Patterns: An Introduction to Object Oriented Analysis and Design, Pearson Education, 2nd Edition, 2003.
3. Bernd Bruegge, Allen H. Dutoit, "Object Oriented Software Engineering using UML, Patterns and Java", Pearson Education 2nd Edition 2004.

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1. INTRODUCTION 9

Introduction – Network concepts – Web concepts – Internet addresses - Retrieving Data with URL – HTML – DHTML: Cascading Style Sheets - Scripting Languages: Javascript – Vbscript.

2. COMMON GATEWAY INTERFACE 9

Common Gateway Interface: Programming CGI Scripts – HTML Forms – Custom Database Query Scripts – Server Side Includes – Server security issues – XML.

3. JAVA PROGRAMMING 9

Java fundamentals: Classes – Inheritance – Packages – Interfaces – Exceptions Handling – Multi threading - Applets

4. SERVER SIDE PROGRAMMING 9

Server side Programming – Active server pages – Java server pages – Java Servlets: Servlet container – Exceptions – Sessions and Session Tracking – Using Servlet context – Dynamic Content Generation – Servlet Chaining and Communications.

5. APPLICATIONS 9

Simple applications – Internet Commerce – Database connectivity – Online databases – EDI Applications in Business – Plug-ins – Firewalls

Total No. of Periods: 45

REFERENCES:

1. Deitel, Deitel and Neito, "INTERNET and WORLD WIDE WEB – How to program", Pearson education asia, 2001
2. D.Norton and H. Schildt, "Java 2: The complete Reference", TMH, 2000.
3. Elliotte Rusty Herold , "Java Network Programming", O'Reilly Publications, 3rd Edition, 2004.
4. Eric Ladd and Jim O'Donnell, et al, "USING HTML 4, XML, and JAVA1.2", PHI publications, 2003.
5. Jeffy Dwight, Michael Erwin and Robert Nikes "USING CGI", PHI Publications, 1997

1. Retrieving data with URLs
2. Implementation of Socket Programming
 - a. Using TCP/IP
 - b. Using UDP
3. Implementation of FTP
4. Implementation of ECHO/PING/TALK
5. Implementation of Remote Command Execution
6. Implementation of ARP
7. Implementation of RARP
8. Implementation of RMI / RPC
9. Implementation of Shortest Path Routing Algorithm
10. Implementation of Sliding Window Protocol

1. INTRODUCTION	9
Attacks - Services - Mechanisms - Conventional Encryption - Classical And Modern Techniques – Encryption Algorithms - Confidentiality.	
2. PUBLIC KEY ENCRYPTION	9
RSA - Elliptic Curve Cryptography - Number Theory Concepts	
3. MESSAGE AUTHENTICATION	9
Hash Functions - Digest Functions - Digital Signatures - Authentication Protocols.	
4. NETWORK SECURITY PRACTICE	9
Authentication, Applications - Electronic Mail Security - IP Security - Web Security.	
5. SYSTEM SECURITY	9
Intruders – Viruses – Worms – Firewalls Design Principles – Trusted Systems.	

Total No. of Periods: 45

REFERENCES:

1. Stallings, Cryptography & Network Security - Principles & Practice, Prentice Hall, 3rd Edition 2002.
2. Bruce, Schneier, Applied Cryptography, 2nd Edition, Toha Wiley & Sons, 1996.
3. Man Young Rhee, "Internet Security", Wiley, 2003.
4. Pfleeger & Pfleeger, "Security in Computing", Pearson Education, 3rd Edition, 2003.

1. INTRODUCTION

9

Characterization of Distributed Systems - Examples - Resource Sharing and the Web - Challenges - System Models - Architectural and Fundamental Models - Networking and Internetworking - Types of Networks - Network Principles - Internet Protocols - Case Studies.

2. PROCESSES AND DISTRIBUTED OBJECTS

9

Interprocess Communication - The API for the Internet Protocols - External Data Representation and Marshalling - Client-Server Communication - Group Communication - Case Study - Distributed Objects and Remote Invocation - Communication Between Distributed Objects - Remote Procedure Call - Events and Notifications - Java RMI - Case Study.

3. OPERATING SYSTEM ISSUES - I

9

The OS Layer - Protection - Processes and Threads - Communication and Invocation - OS Architecture - Security - Overview - Cryptographic Algorithms - Digital Signatures - Cryptography Pragmatics - Case Studies - Distributed File Systems - File Service Architecture - Sun Network File System - The Andrew File System

4. OPERATING SYSTEM ISSUES - II

9

Name Services - Domain Name System - Directory and Discovery Services - Global Name Service - X.500 Directory Service - Clocks, Events and Process States - Synchronizing Physical Clocks - Logical Time And Logical Clocks - Global States - Distributed Debugging - Distributed Mutual Exclusion - Elections - Multicast Communication Related Problems.

5. DISTRIBUTED TRANSACTION PROCESSING

9

Transactions - Nested Transactions - Locks - Optimistic Concurrency Control - Timestamp Ordering - Comparison - Flat and Nested Distributed Transactions - Atomic Commit Protocols - Concurrency Control in Distributed Transactions - Distributed Deadlocks - Transaction Recovery - Overview of Replication And Distributed Multimedia Systems

Total No of Periods: 45**REFERENCES:**

1. George Coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems Concepts and Design, Pearson Education, 3rd Edition, 2002.
2. Sape Mullender, Distributed Systems, Addison Wesley, 2nd Edition, 1993.
3. Albert Fleishman, Distributes Systems- Software Design and Implementation, Springer-Verlag, 1994
4. M.L.Liu, Distributed Computing Principles and Applications, Pearson Education, 2004.
5. Andrew S Tanenbaum , Maarten van Steen, Distributed Systems - Principles and Paradigms, Pearson Education, 2002
6. Mugesh Singhal, Niranjan G Shivaratri, Advanced Concepts in Operating Systems, Tata McGraw Hill Edition, 2001

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SOFTWARE PROJECT MANAGEMENT

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1. INTRODUCTION	9
Conventional Software Management – Evolution of Software Economics – Improving Software Economics – Conventional versus Modern Software Project Management	
2. SOFTWARE MANAGEMENT PROCESS FRAMEWORK	9
Lifecycle Phases – Artifacts of the Process – Model Based Software Architectures – Workflows of the Process – Checkpoints of the Process	
3. SOFTWARE MANAGEMENT DISCIPLINES	9
Iterative Process Planning - Organisation and Responsibilities – Process Automation – Process Control and Process Instrumentation – Tailoring the Process	
4. MANAGED AND OPTIMIZED PROCESS	9
Data Gathering and Analysis: Principles of Data Gathering, Data Gathering Process, Software Measures, Data Analysis - Managing Software Quality – Defect Prevention	
5. CASE STUDIES	9
COCOMO Cost Estimation Model – Change Metrics – CCPDS-R	

Total No of periods: 45

REFERENCES:

1. Walker Royce "Software Project Management – A Unified Framework ", Pearson Education, 2004 (Unit I, II, III & V)
2. Humphrey, Watts: "Managing the software process ", Addison Wesley, 1989. (Unit IV)
3. Ramesh Gopaldaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
4. Bob Hughes, Mikecoterell, "Software Project Management", 3rd Edition, Tata McGraw Hill, 2004.

14

1. DATABASE MANAGEMENT 9

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

2. ADVANCED DATABASES 10

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

3. QUERY AND TRANSACTION PROCESSING 8

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

4. 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.

5. DATABASE DESIGN ISSUES 9

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

Total No of periods: 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

308CSPT02**308CSPE06 MULTIMEDIA SYSTEMS**

3 1 0 100

1. INTRODUCTION AND QOS 9

Introduction-QOS Requirements and Constraints-Concepts-Resources- Establishment Phase-Run-Time Phase-Management Architectures.

2. OPERATING SYSTEMS 9

Real-Time Processing-Scheduling-Interprocess Communication-Memory and Management-Server Architecture-Disk Management.

3. FILE SYSTEMS AND NETWORKS 9

Traditional and Multimedia File Systems-Caching Policy-Batching-Piggy backing-Ethernet-Gigabit Ethernet-Token Ring-100VG AnyLAN-Fiber Distributed Data Interface (FDDI)- ATM Networks-MAN-WAN.

4. COMMUNICATION 9

Transport Subsystem-Protocol Support for QOS-Transport of Multimedia-Computer Supported Cooperative Work-Architecture-Session Management-MBone Applications.

5. SYNCHRONIZATION 9

Synchronization in Multimedia Systems-Presentation-Synchronization Types-Multimedia Synchronization Methods-Case Studies-MHEG-MODE-ACME.

Total No of periods: 45

REFERENCES:

1. Ralf Steinmetz and Klara Nahrstedt, "Multimedia Systems", Springer, I Edition 2004.
2. Ralf Steinmetz and Klara Nahrstedt, Media Coding and Content Processing, Prentice hall, 2002.
3. Vaughan T, Multimedia, Tata McGraw Hill, 1999.
4. Mark J.B., Sandra K.M., Multimedia Applications Development using DVI technology, McGraw Hill, 1992.
5. K. R. Rao, Zoran S. Bojkovic, Dragorad A. Milovacovic, D. A. Milovacovic, Multimedia Communication Systems: Techniques, Standards, and Networks, Prentice Hall, 1st Edition, 2002
6. Ze-Nian Li and Mark S. Drew, Fundamentals of Multimedia, Pearson, 2004.

1. INTRODUCTION	9
Introduction to Visualisation - Principles of 2D & 3D Computer Graphics - Models and Simulation strategies.	
2. POPULAR TECHNIQUES	9
Surface Plots - City scopes - Fish eye views - Benediktine Space - Perspective walls - Cone trees and Cam trees - Sphere Visualisation - Rooms - Emotical icons.	
3. ADVANCED TECHNIQUES	9
Self-Organising graphs - Spatial Data arrangements - Benediktine Cyberspace - Statistical Clustering and Proximity measures - Hyper Structures - Human Centered Approaches - Information Cube.	
4. VISUALIZATION SYSTEMS	9
Database Visualisation - Populated Information Terrains - Legibility enhancement - Hyper structure Visualisation - Information Visualisation.	
5. SOFTWARE VISUALIZATION	9
Rapid Prototyping - Models for user interaction - Formal Specification of Software - DFD - Software Architecture.	

Total No of periods: 45

REFERENCES:

1. Chaomei Chan, Information Visualisation and Virtual Environment, Springer - Verlag, 1999.
2. Benedikt. M, Cyberspace: First Steps, MIT Press, 1991.
3. Pauline Wills, Visualisation: A Beginner's Guide, Hodder & Stoughton, 1999.
4. Sheryl A Sorby exal, 3D Visualisation for Engineering Graphics, Prentice Hall, 1998.