

**SAKTHI COLLEGE OF ARTS AND SCIENCE FOR WOMEN, ODDANCHATRAM**

**(Recognized Under Section 2(f) and 12(B) of UGC Act 1956)**

**(Affiliated to Mother Teresa Women's University, Kodaikanal)**

**PG DEPARTMENT OF INFORMATION TECHNOLOGY**

**CURRICULUM FRAMEWORK AND SYLLABUS FOR**

**OUTCOME BASED EDUCATION IN**

**SYLLABUS FOR**

**M.Sc., INFORMATION TECHNOLOGY**

**FRAMED BY**

**MOTHER TERESA WOMEN'S UNIVERSITY, KODAIKANAL**

**UNDER**

**CHOICE BASED CREDIT SYSTEM**

**2015 – 2018**

## COMMON COURSE STRUCTURE FOR M.Sc., INFORMATION TECHNOLOGY

### I Semester

<b>SUB CODE</b>	<b>Theory/ Practical</b>	<b>Title of the Paper</b>	<b>Cre dits</b>	<b>Hrs</b>	<b>Int.</b>	<b>Ext</b>
Core 1	Theory	Programming in C & C++	5	5	40	60
Core 2	Theory	Data Structures	5	5	40	60
Core 3	Theory	Digital Principles and Computer Organization	5	5	40	60
Core 4	Practical	C, C++ and Data Structures Lab	5	5	40	60
Elective 1	Theory	Principles of Information Technology	5	5	40	60
		<b>Total</b>	<b>25</b>	<b>25</b>		

### II Semester

<b>SUB CODE</b>	<b>Theory/ Practical</b>	<b>Title of the Paper</b>	<b>Cre dits</b>	<b>Hrs</b>	<b>Int.</b>	<b>Ext</b>
Core 5	Theory	Programming in JAVA	5	5	40	60
Core 6	Theory	Computer Networks	5	5	40	60
Core 7	Theory	Operating System	5	5	40	60
Core 8	Practical	Programming in JAVA Lab	5	5	40	60
Elective 2	Theory	Mobile Communication Technology	5	5	40	60
		<b>Total</b>	<b>25</b>	<b>25</b>		

### III Semester

<b>SUB CODE</b>	<b>Theory/ Practical</b>	<b>Title of the Paper</b>	<b>Cre dits</b>	<b>Hrs</b>	<b>Int.</b>	<b>Ext</b>
Core 9	Theory	Relational Database Management System	5	5	40	60
Core 10	Theory	Digital Image Processing	5	5	40	60
Core 11	Theory	Software Engineering	5	5	40	60

Core 12	Practical	RDBMS Lab	5	5	40	60
Elective 3	Theory	Multimedia and its Applications	5	5	40	60
		<b>Total</b>	<b>25</b>	<b>25</b>		

#### IV Semester

<b>SUB CODE</b>	<b>Theory/ Practical</b>	<b>Title of the Paper</b>	<b>Cre dits</b>	<b>Hrs</b>	<b>Int.</b>	<b>Ext</b>
Core 13	Theory	Web Technology	5	5	40	60
Core 14	Theory	Data Mining	5	5	40	60
Core 15	Project	Major Project	5	5	40	60
		<b>Total</b>	<b>15</b>	<b>15</b>		

## **CORE 1 / PROGRAMMING IN C & C++**

### **Unit I:**

Fundamentals of C - Declarations-Variables – Data Types – Expressions – Relational and Logical operations – Control Statements – Conditional Statements – Arrays – Strings

### **Unit II:**

Pointers - Functions: user defined – Local and Global specification – Boolean Functions – Friend Functions – Standard input and output – Files.

### **Unit III:**

Principles of Object-Oriented Programming, What is C++? – Applications of C++ - C++ Statements – Structure of C++ Program, Tokens, Expressions and Control Structures – Functions in C++ - Classes and Objects.

### **Unit IV:**

Constructors and Destructors – Type Conversions – Inheritance: Extending Classes.

### **Unit V:**

Pointers, Virtual Functions and Polymorphism – Operator Overloading, Managing Console I/O Operations, Files

### **Reference Books:**

1. Byron S.Gotfried, “Programming with C”, McGraw Hill Publication
2. E.Balagurusamy, “Programming in ANSI C” Tata McGraw Hill, 2002
3. Herbert Schildt, “Teach Yourself C++”, III Edition, Tata McGraw Hill 5<sup>th</sup> Edition, 2000
4. E.Balagurusamy, “Programming in ANSI C++” Tata McGraw Hill, 2002

## **CORE 2 / DATA STRUCTURES**

### **Unit I: Data Structures**

Introduction – arrays – Structures – Stack : Definition and Examples , Representing Stacks – Queues and Lists: Queue and its Representation, Lists – Applications of Stack, Queue and Linked Lists.

### **Unit II: Trees**

Binary Trees – Operation on Binary Trees – Binary Tree Representations – Node Representation, internal and External Nodes , Implicit Array Representation – Binary Tree Traversals – Huffman algorithm – Representing Lists as Binary Trees

### **Unit III: Sorting and Searching**

General Background – Exchange Sorts – Selection and Tree Sorting – insertion Sorts – Merge and Radix Sorts – Basic Search Techniques – Tree Searching – General Search Trees – Hashing

### **Unit IV: Graphs and their Applications**

Graphs – Application of Graphs – Graph Representation – Transitive Closure – Warshall's Algorithm – Shortest Path Algorithm – A Flow Program \_ Dijkstra's Algorithm – An Application of Scheduling – Linked Representation of Graphs – Graph Traversals

### **Unit V: Storage Management**

General Lists: Operations, Linked List Representation , Using Lists, Freeing List Nodes – Automatic List Management: Reference Count Method, Garbage Collection, Algorithms, Collection and Compaction

### **Text Books:**

1. Tanenbaum A.S., Langram Y. Augestein M.J. – “Data Structures Using C” – Pearson Education, 2004

### **Reference Books:**

1. Robert Kruse & Clovis L. Tondo – “Data Structures and Program design in C” – Prentice Hall, 2<sup>nd</sup> Edition, 1991.
2. Weiss – “Data Structures and Algorithm Analysis in C” – Addison Wesley – Second Edition, 1997

## **CORE 3 / DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION**

### **Unit I:**

**Introduction to Computers** – Number Systems – Data Types – Data Representations – Fixed Point, Floating Point, Gray, Excess – 3, Alphanumeric Codes – Binary Codes – Error Detection Codes

**Arithmetic Logic Unit:** Binary Half Adder, Full Adder and Their Designs – Positive and Negative Numbers, Binary Addition & Subtraction Using 1s, 2s, 9s Complements, Binary Multiplication

### **Unit II:**

**Digital Logic Circuits:** Digital Computers – Logic Gates – Boolean Algebra –Map Simplification – Combinational Circuits – Flip Flops – Sequential Circuits

**Digital Components:** Integrated Circuits –Decoders – Multiplexers – Registers – Shift Registers – Binary Counters.

**Memory Unit** :Classification of Memory: Primary – Secondary – Cache Memory – Associate Memory – Virtual Memory – RAM, ROM

### **Unit III:**

**Register Transfer Language** – Register Transfer – Bus and Memory Transfer – Arithmetic Micro Operations – Logic Micro Operations – Shift Micro Operations – Arithmetic Logic Shift Unit.

**Basic Computer Organization and Design:** Instruction Codes – Computer Registers – Computer Instructions – Timing and Control Instruction Cycle – Memory Reference Instructions – Input – output and interrupt complete computer description – Design of a Basic Computer – Design of Accumulator Logic.

### **Unit IV:**

Arithmetic and Logic Units – Stack Organisation – Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Microprocessor Organization – Addressing Sequencing – Micro Program Example.

### **Unit V:**

Introduction to Parallel Processing – Parallelism in Uniprocessor System – Parallel Computer Structure.

### **Reference Books:**

1. Digital Principles and Applications, Albert Paul Malvino, Donald P. Leach, McGraw Hill.
2. Computer System Architecture, M. Morris Mano, Prentice Hall of India.

3. Digital Computer Fundamentals, Thomas C.Bartee, McGraw Hill.
4. Computer Organization, Hamachar V.C.,Vranesic Z.G., Zaky S.G., Tata McGraw Hill.
5. Computer Architecture and Organization, J.P.Hayes, McGraw Hill, Singapore.

## **ELECTIVE I / PRINCIPLES OF INFORMATION TECHNOLOGY**

### **Unit I**

An overview of the revolution computers and Communications: From the analog to the digital age: The “New Story” of computers and communications – The basic elements of a computer & communication system – Communications: Development in Computer Technology- Developments in Communication Technology – Computer and Communication technology combined: Connectivity and Interactivity – The “All Purpose Machine”: The information Appliance that will change your future – The Ethics of Information Technology.

### **Unit II**

Application Software: Tools for thinking and working – Ethics and intellectual property rights: The four types of Application software – the user interface and other basic features – word processing – Spreadsheets – Database software – Presentation graphics software – communications software – Desktop accessories and personal information managers – integrated software and suites – Groupware internet web browsers – Specialized software.

### **Unit III**

Communications: Starting along the information Highway: The practical uses of communication and connectivity – telephone related communication services – Video/ voice communication. Video conferencing and picture phones – Online information services – The Internet – Shared resources: Workgroup computing – Electronic Data interchange and intranets: Telecommuting and virtual offices – using a microcomputer to communicate: Analog and Digital signal – modems and data communication software – ISDN lines – Cable Modems – Communication channels – Communication Networks – Local Networks – Factors affecting data transmission – Cyber ethics – Netiquette – Controversial and censorship and privacy issues.

### **Unit IV**

Storage and Databases: Foundations for interactivity- multimedia and Knowledge storage capacity – compression and decompression – criteria for rating secondary storage devices – Diskettes – Hard Disks – Optical Disks – Magnetic Tapes – Organizing data in secondary storage: Databases- Data Storage – Hierarchy and the concept of the key field – File management – Basic concepts – File management systems – Data Management systems – Types of database organization – Features of DBMS – The Ethics of using Database – Concerns about accuracy and privacy.

## **Unit V**

Information System and Software Development: Management Information Systems – The six phases of system analysis design – The five steps in programming – five generations of programming languages – Programming languages – Object oriented and Visual programming– Internet programming – HTML- XML- Java and ActiveX – The information super Highway – Security Issues.

### **Text Books**

1. Satcey C. Sawyer- Brain K. Williams Sarah E Hutchinson using Information Technology – Brief version A practical introduction to computer and communications– 2nd edition McGraw Hill.
2. Satcey C. Sawyer- Brain K. Williams Sarah E Hutchinson using Information Technology – Brief version A practical introduction to computer and communications– 3rd edition McGraw Hill.

## **PROGRAMMING IN C & C++ - LAB**

### **C Programs**

1. Swapping
2. Print floyd's triangle
3. Addition using pointers
4. Stack using array
5. Searching using structures
  - a. Linear search
  - b. Binary search
6. Sorting
  - a. Bubble sort
  - b. Insertion sort
  - c. Selection sort
7. Matrix
  - a. Add matrices
  - b. Subtract matrices
  - c. Transpose matrix
8. Merge two files

### **C++ Programs**

1. Classes and objects
2. Function overloading
3. Constructors
4. Friend function
5. Inline function
6. Operator overloading
7. Conversion function
8. Inheritance
9. Polymorphism
10. Files

# **JAVA PROGRAMMING**

## **Unit I**

Introduction: Introduction to java – Java and Internet – Byte codes – Features of Java – Java development Environment – Java character set – operators – control statements – simple programs.

## **Unit II**

Object Orientation in Java: Classes – Methods – Inheritance – Packages – Interfaces – programming examples.

Exception Handling: Fundamentals – Exception types – Try catch block – throw- throw clause – finally – user defined Exceptions.

## **Unit III**

Threads: Thread model – Thread priorities – Runnable interface – creating a thread- multiple threads – Synchronization – interthread communication – suspending- resuming and stopping threads.

## **Unit IV**

Input/Output: String handling – Exploring java io. Package.

Applets: Applet basics – AWT classes – Window fundamentals – working with frame windows – graphics – AWT controls – Swing – Layout Managers – Menus – Event Handling.

## **Unit V**

Java Networking: Basics – Socket overview – TCP/IP client sockets- TCP/IP server sockets– URL – Datagram sockets.

Concepts of Advanced Java Programming: JAVA SCRIPTS – Servlets – JDBC – EJB – JSP.

## **Text Book**

1. Patrick aughton- Herbert Schildt- “JAVA2- The complete reference” Tata McGraw Hill Fifth Edition- New Delhi 2002

## **Reference Books**

1. Deitel H M and Deitel P J “JAVA – How to Program “ Pearson Education - New Delhi 2003
2. Hubbard John R- “Schaum’s Outline of Theory and Problems of Programming with Java” Tata McGraw Hill- Second Edition- New Delhi 2004
3. Chitra A “Internet and Java Programming” ISTE 2002.

## **COMPUTER NETWORKS**

### **UNIT I:**

Network Goals - Network Architecture: The OSI Reference Model - Physical Layer: Transmission Media – Wireless Transmission - Switching Methods – ISDN - Satellite Networks.

### **UNIT II:**

Data Link Layer Design Issues - Error Detection and Correction - Elementary Data Link Protocols - Protocol Specification and Verification.

### **UNIT III:**

Network Layer - Design Issues - Routing, Congestion, Inter Networking - Routing Algorithms - Congestion Control Algorithms

### **UNIT IV:**

Transport Layer - Design Issues - Connection Management - Addressing, Establishing and Releasing a Connection, Timer Based Connection management, Multiplexing, Crash Recovery, Cryptography - Ethernet - Arpanet.

### **UNIT V:**

Network Security: Cryptography – Symmetric Key Algorithm: DES, AES – Public Key Algorithms: RSA – Communication Security – E-Mail Security, Web Security.

### **Text Book:**

Andrew S.Tenenbaum - Computer Networks (second edition), Prentice Hall of India.

## **CORE 7 / OPERATING SYSTEM**

### **Unit I Introduction**

Architecture of OS - Operating system objectives and functions- Virtual Computers- Interaction of O. S. & hardware architecture- Evolution of operating systems- Batch-multiprogramming. Multitasking- Multiuser- parallel- distributed & real –time O.S. -System calls- O. S. Shell.

### **Unit II Process Management**

Process - Process description- Process states- Process control- Threads- Processes and Threads- Uniprocessor Scheduling: Types of scheduling- Scheduling algorithms: FCFS- SJF- Priority- Round Robin- UNIX Multi-level feedback queue scheduling- Thread Scheduling- Multiprocessor Scheduling concept- Real Time Scheduling concept..

### **Unit III Process Communication and Synchronization**

**Concurrency:** Principles of Concurrency Mutual Exclusion H/W Support- software approaches- Semaphores and Mutex- Message Passing- Monitors- Classical Problems Of Synchronization: Readers-Writers Problem- Producer Consumer Problem- Dining Philosopher problem

**Deadlock:** Principles of deadlock- Deadlock Prevention- Deadlock Avoidance- Deadlock Detection- An Integrated Deadlock Strategies

### **Unit IV Memory Management**

Memory Management requirements- Memory partitioning: Fixed -dynamic- partitioning- Buddy System Memory allocation Strategies (First Fit- Best Fit- Worst Fit- Next Fit)- Fragmentation- Swapping- Segmentation - Paging- Virtual Memory- Demand paging- Page Replacement Policies (FIFO- LRU- Optimal- clock) -Thrashing- Working Set Model.

### **Unit V I/O and File Management**

I/O Management and Disk Scheduling: I/O Devices- Organization of I/O functions- Operating System Design issues- I/O Buffering- Disk Scheduling (FCFS- SCAN- C-SCAN- SSTF)- Disk Caches. File Management: Overview - File Organization and access - File Directories- File Sharing- Security issues- Record Blocking- Secondary Storage Management. Comparative study of Windows and UNIX file system.

### **Text Books:**

- 1) Stalling William- "Operating Systems 6th Edition- Pearson Education
- 2) Das Sumitabha-" Unix Concepts and Applications"- 3rd Edition- Tata McGraw Hill- 2003.

**Reference Books:**

- 1) Milan Milenkovic "Operating Systems Concepts and Design "
- 2) Silberschatz A.-Galvin P.- Gagne G.-"Operating System Concepts 8e"-John Wiley and Sons-2003
- 3) Andrew S. Tanenbaum -Modern Operating Systems- 3/E.
- 4) M. J. Bach- "The Design of The Unix Operating System".
- 5) Charles Crowley- "Operating Systems : A Design-oriented Approach" .

## **PROGRAMMING IN JAVA LAB**

1. Demonstrate the Program structure of Java
2. Demonstrate the String Operations
3. Demonstrate Package Creation and use in Program
4. Demonstrate Inner Class
5. Demonstrate Inheritance
6. Demonstrate 2D Shapes on Frames
7. Demonstrate Text and Fonts
8. Demonstrate Event Handling for various types of Events
9. Multicasting Techniques
10. Swing Components
11. Demonstrate the use of Dialog Box
12. Create a Dialog Box
13. Create a Tool Bar- Menu & Popup Menu
14. Implement File Handlings
15. Demonstrate Applet Programming
16. Implement Generic Programming
17. Demonstrate JDBC on Applet/Application
18. Demonstrate Multithreading
19. Implement Client Server Networking

## **ELECTIVE 2 MOBILE COMMUNICATION TECHNOLOGY**

### **UNIT I**

Cellular systems- Frequency Management and Channel Assignment- types of handoff and their characteristics- dropped call rates & their evaluation -MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks

### **UNIT II**

Wireless LAN – IEEE 802.11 Standards – Architecture – Services – Mobile Ad hoc Networks- WiFi and WiMAX - Wireless Local Loop

### **UNIT III**

GSM-architecture-Location tracking and call setup- Mobility management- Handover- Security-GSM SMS –International roaming for GSM- call recording functions-subscriber and service data mgt —Mobile Number portability -VoIP service for Mobile Networks – GPRS – Architecture-GPRS procedures-attach and detach procedures-PDP context procedure-combined RA/LA update procedures-Billing

### **UNIT IV**

Mobile IP – Dynamic Host Configuration Protocol-Mobile Ad Hoc Routing Protocols– Multicast routing-TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP – Fast Retransmit / Fast Recovery – Transmission/Timeout Freezing-Selective Retransmission – Transaction Oriented TCP- TCP over 2.5 / 3G wireless Networks

### **UNIT V**

WAP Model- Mobile Location based services -WAP Gateway –WAP protocols – WAP user agent profile- caching model-wireless bearers for WAP - WML – WMLScripts - WTA - iMode- SyncML

### **Text Books:**

1. Jochen Schiller- “Mobile Communications”- Second Edition- Pearson Education- 2000UNIT III
2. William Stallings- “Wireless Communications and Networks”- Pearson Education- 2002.

### **References:**

1. Kaveh Pahlavan- Prasanth Krishnamoorthy- “Principles of Wireless Networks”- First Edition- Pearson Education- 2000UNIT III
2. Uwe Hansmann- Lothar Merk- Martin S. Nicklons and Thomas Stober- “Principles of

Mobile Computing”- Springer- 200UNIT III

3. C.K.Toth- “AdHoc Mobile Wireless Networks”- First Edition- Pearson Education- 2002

### **CORE 9 / RELATIONAL DATABASE MANAGEMENT SYSTEMS**

#### **Unit I: Introduction**

Database Systems vs. File Systems- View of Data-Data Models-Database Languages- Transaction Management-Database System Structure-History of Database Systems-Database System Applications-Entity Relational Model.

#### **Unit II: Relational Databases**

SQL-Basic Structure-Set Operations-Complex Queries-Joined Queries-DDL-Embedded SQL-Dynamic SQL-Other SQL Functions-Query by Example-Normalization.

#### **Unit III:**

Relational Database Design-Indexing & Hashing-Static Hashing-Dynamic Hashing-Multiple Key Access-Integrity And Security.

#### **Unit IV: Query Evaluation and Optimization**

Query Processing-Selection Operation-Sorting-Join Operation-Evaluation of Expressions- Query Optimization.

#### **Unit V: Transaction Management**

Transaction Management-Concurrency Control-Protocols-Deadlock Handling-Recovery Systems-Recovery with Concurrent Transactions-Shadow Paging-Buffer Management-Case Studies-Oracle-Microsoft SQL Server

#### **Reference Books**

1. Abraham Silberschatz, Henry F.Korth and S.Sudharssan, “Database System Concepts”, 4<sup>th</sup> Edition, Tata McGraw Hill, 2002
2. Raghu Ramakrishnan & Johannesgerhrke, “Database Management Systems”, McGraw Hill International edition, 2000
3. Introduction to RDBMS-C.J.Date

## **CORE 10 / DIGITAL IMAGE PROCESSING**

### **UNIT I / IMAGE FUNDAMENTALS AND TRANSFORMS**

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**

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**

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**

Lossless compression – Variable length coding – LZW coding – Bit plane coding – Predictive coding – PCM – Lossy compression – Transform coding – Wavelet coding – Basics of image compression standards – JPEG – MPEG – Basics of vector quantization.

### **UNIT V / IMAGE SEGMENTATION AND REPRESENTATION**

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.

### **TEXT BOOK:**

1. Rafael C Gonzalez and Richard E Woods- “Digital Image Processing 2nd Edition- Pearson Education- 2003.

### **REFERENCES:**

1. William K Pratt- “Digital Image Processing”- John Willey.
2. A. K. Jain- “Fundamentals of Digital Image Processing”- PHI- New Delhi- 1995.
3. Chanda Dutta Magundar- “Digital Image Processing and Applications”- PHI- 2000.

## **CORE 11 / SOFTWARE ENGINEERING**

### **Unit I:**

Introduction to Software Engineering – Definition and Size Factors – Quality And Productivity Factors – Managerial Issues

### **Unit II:**

Planning as Software Project: Defining the Problem – Developing A Solution Strategy – Planning the Development Process – Planning An Organizational Structure – Other Planning Activities

### **Unit III:**

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing Level estimation – Estimating Software Maintenance Costs

Software Requirements Definition : Software Requirements Specification – Formal Specification Techniques – Languages And Pre Processors For Requirement Specification

### **Unit IV:**

Software Design: Fundamental Design Concept – Module and Modularization Criteria – design Notations – Design Techniques – Detailed Design Considerations Real Time And Distributed System Design – Test Plans And Milestones, Walkthroughs And Inspections – Design Guidelines

### **Unit V:**

Verification and Validation: Quality Assurance – Walkthroughs And Inspections, Static Analysis – Symbolic Execution – Unit Testing And Debugging – System Testing – Formal Verification

Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source Code Metrics – Other Maintenance Tools And Techniques

### **REFERENCE BOOKS:**

1. Software Engineering Concepts – Richard Fairley
2. Software Engineering Design – H.C Shooman

## **CORE 12 / RDBMS LAB**

### **1. Creating Database**

Creating a Database

Creating a Table

Specifying Relational Data Types

Specifying Constraints

Creating Indexes

### **2. Table and Record Handling**

INSERT statement

Using SELECT and INSERT together

DELETE- UPDATE- TRUNCATE statements

DROP- ALTER statements

### **3. Retrieving Data from a Database**

The SELECT statement

Using the WHERE clause

Using Logical Operators in the WHERE clause

Using IN- BETWEEN- LIKE - ORDER BY- GROUP BY and HAVING

*Clause*

Using Aggregate Functions

Combining Tables Using JOINS

Subqueries

### **4. Database Management**

Creating Views

Creating Column Aliases

Creating Database Users

Using GRANT and REVOKE

## **ELECTIVE 3 / MULTIMEDIA AND ITS APPLICATIONS**

### **Unit I**

Introduction – Definition – Multimedia Hardware – Multimedia Software – Multimedia Networking – Multimedia Applications – Multimedia Environments – Multimedia Computer Components – Multimedia Standards – Multimedia PC

### **Unit II**

Multimedia Information Systems: Limitations in workstation Operating Systems. Middleware System Services Architecture: Goals of Multimedia System Services – Multimedia System Services Architecture Text: Elements of Text – Using Text in Multimedia Applications – Graphics: Element of Graphics – Images and color – Graphics file and Application formats – Obtaining Images for Multimedia use – Using Graphics on multimedia applications

### **Unit III**

Digital Audio Representation and Processing: Uses of Audio in Computer applications – Digital Representations of sound – Transmission of Digital Sound – Digital Audio Signal Processing- Video Technology: Raster Scanning Principles – Sensors for TV Cameras – Color fundamentals – Color Video – Digital Video and Image Compression: Evaluating Compression System – Video Compression techniques – JPEG Image compression standard – MPEG motion Video compression standard.

### **Unit IV**

Multimedia Communications Systems: Applications- Network Services – Network Protocols. Multimedia Conferencing: Teleconferencing systems – Requirements for Multimedia Communications – Multimedia Conferencing Architectures.

### **Unit V**

Multimedia and Internet: Internet – Client/Server technology – Communications protocol – Internet addressing – Internet functions – HTML and Web Authoring. Multimedia Development Team: Team approach – Assembling a multimedia Production Team – Multimedia Development Process: Multimedia Project – Structured Multimedia Development– Costing multimedia Project.

### **Text Book**

1. For Unit I: Tay Vaughan- “Multimedia making it work”- 4<sup>th</sup> Edition Tata McGraw-Hill Edition- 2000
2. For Units II- III- IV: John F.Koegel Buford- “Multimedia Systems”- Published by Addison Wesley Longman- 3<sup>rd</sup> Edition year 2000

3. For Unit II- V: David Hillman- "Multimedia Technology and Applications"- Galgotia Publications Pvt. Ltd.- Year 1998

**Reference:**

Fred T.Hofstetter- "Multimedia Literacy"- McGraw Hill- 1995.

## **CORE 13 / WEB TECHNOLOGY**

### **UNIT-I**

**Introduction :** Introduction to Internet- Web Client/Server Model- Protocols for Web Client/Server communication

### **UNIT-II**

Components of .NET Framework- Overview of IIS- ISAPI Extensions- ISAPI Filters.

### **UNIT-III**

**Overview of .NET Framework :** Web Forms- Common Language Runtime and Class Library- Managed Components- Web Services- COM+ Component services.

### **UNIT-IV**

**Crash Course in VB.NET :** Data Types- Arrays- Functions- Flow Control- Exception Handling- Constructors and Destructors- Class Properties- Inheritance

### **UNIT-V**

Polymorphism- Interfaces- Implementing polymorphism using Interfaces- Multithreaded Programming.

### **Text Book**

1. Visual Basic Programming 2005 Black Book- Steven Holzner et al- Dreamtech Press.

## **CORE 14 / DATA MINING**

### **Unit I:**

Data mining: Data Mining Functionalities-Classification of Data Mining Systems-Major issues in data mining. Data Warehousing: Data Warehouse-Data Mining Architecture-From data warehousing to data mining.

### **Unit II:**

Data Processing: Data Cleaning-Data integration and transformation-Data Reduction-Discrimination and concept-Hierarchy generation.

### **Unit III:**

Data mining primitives, Languages and system architecture: Data Mining primitives. A Data mining query languages-Designing Graphical user interfaces based on a data mining

### **Unit IV:**

Concept Description: Characterization and Comparison: Data Generalization and Summarization-Based characterization-Analysis of attribute relevance-Mining Class Comparisons-Discrimination between different classes-Mining descriptive statistical measures in large database.

### **Unit V:**

Mining association rules in large databases: Association rule mining-Mining single dimensional Boolean association rules from transactional databases-Mining multilevel association rules from relational databases and data warehouses.

### **Reference Book:**

Data Mining Concepts and Techniques-Jiawei Han and Michaline Kamber.