

MADURAI KAMARAJ UNIVERSITY
(University with Potential for Excellence)
M.Sc. Computer Science (Non-Semester)

REGULATIONS AND SYLLABUS
(Effective from 2013-2014 and afterwards)

Objectives

The Syllabus for M.Sc. Computer Science degree under non-semester system has been enabling the students to understand the knowledge of computer.

Eligibility:

Candidates who have undergone 10+2+3 pattern with Computer Science as a major subject / B.Sc. Mathematics/ B.Sc. (Physics) / B.Sc. (Chemistry) with Mathematics as one of the ancillary subjects / B.Sc.(Electronics & Communication) / B.Sc. (Electronics) are eligible to the admission to the I year of M.Sc.(Computer Science) Program.

Syllabi for M.Sc. (Computer Science) under Non-Semester pattern

I Year

1. Mathematical Foundations of Computer Science
2. Programming in C and C++
3. Digital principles and Computer organization
4. Software Engineering
5. Data Structures and Algorithms
6. Operating System
7. Programming in C Lab
8. C++ and Data Structures Lab

II Year

1. Computer Graphics
2. Computer Networks
3. Relational Database Management system
4. Object oriented programming with Java
5. Web Technology
6. Data Mining
7. JAVA Lab
8. WEB Technology Lab

Question Pattern

Part-A : 10 x 2 = 20 Answer all questions.

Part-B : 5 X 6 = 30 Either or Pattern

Part-C : 5 X 10 = 50 Either or Pattern

A candidate shall be declared as passed if he/she scored minimum of 50% marks in each subject.

I YEAR

Sl.No.	Subject:	Max. Mark	Pass Mark
1	Mathematical Foundations of Computer Science	100	50
2	Programming in C and C++	100	50
3	Digital principles and Computer organization	100	50
4	Software Engineering	100	50
5	Data Structures and Algorithms	100	50
6	Operating System	100	50
7	LAB : Programming in C	100	50
8	LAB : C++ and Data Structures	100	50

II YEAR

Sl.No.	Subject:	Max. Mark	Pass Mark
1	Computer Graphics	100	50
2	Computer Networks	100	50
3	Relational Database Management system	100	50
4	Object oriented programming with Java	100	50
5	Web Technology	100	50
6	Data Mining	100	50
7	JAVA Lab	100	50
8	WEB Technology Lab	100	50

The following list of parameters taken into account for the evaluation of the practical examinations

For Language-based programming.

(C/C++/JAVA/VISUAL BASIC etc.,)

Algorithm-Coding-Compilation-Debugging – Result - Viva Voce.

I YEAR

1. MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Unit I:

Logic: proposition – logical operators- truth tables –normal forms – laws of logic - proofs in propositional calculus (theory of inference)

Unit II:

Graph Theory: Basic concepts – Matrix representation of graphs – shortest path problem –directed trees –binary trees.

Unit III:

Formal languages: Four class of grammars(phase structure, context sensitive, context free, regular) context free language – generation trees.

Finite Automata: Representation of FA – Acceptability of a string by FA – Non deterministic FA (NDFFA) - Acceptability of a string by NDFFA. Equivalence of FA and NDFFA – procedure for finding FA ~ NDFFA.

Unit IV:

Algebraic structures: Groups- subgroups- homomorphism – cosets – Lagrange's theorem- normal subgroups –semi groups-monoids-homomorphism of semigroup and monoids – subsemigroups and submonoid.

Unit V:

Lattices and Boolean algebra: Lattices – properties – new lattices –modular and distribution lattices. Boolean algebra: Boolean polynomials –switching circuits.

Text Book:

Discrete Mathematics – M.K.Venkatraman, N.Sridharan, N.Chandrasekaran, The National Publishing Company,2001.

Chapters 9.1-9.56, 11.1-11.81, 12.1-12.20, 12.43-12.61, 7.1-7.39,7.48-7.53,10.1-10.42,10.71

Ref .Books :

1. Modern Algebra by S. Arumugam & A. Thangapandi Issac, New Gamma Publishing House, Palayamkottai. (for Units I, III)
2. Invitation to Graph Theory by S.Arumugam and S.Ramachandran , Scitech Publications, Chennai. (for units IV , V)

2. PROGRAMMING IN C AND C++

UNIT I

Overview of C: History of C-Importance of C-Basic structure of C-Programming style-Contents Variables and Data types-declaration of variables, storage class- defining symbolic constants- declaring a variable as constant, volatile-overflow and underflow of data. Operator and expressions:-operator precedence and associativity – mathematical functions – managing I/O Operations: Decision making and branching: if statement, if... else statement-nesting of if...else statement- Else if ladder-Switch statement- the?: Operator- go to statement. The While statement – do statement – The for statement –jumps in loops.

UNIT II

Arrays: One dimensional array – declaration, initialization – two dimensional arrays – multi dimensional array – initialization. Strings: declaration, initialization of string variables –reading and writing string – arithmetic operations on strings – putting strings together – comparison – sting handling function.

User defined functions: need – multi function program –elements of user defined functions –definition – return values and their types – function calls, declaration, category of all types of arguments and return values –nesting of functions – recursion- Structure and unions: defining a structure – declaring structure variables – accessing structure members– arrays of structures – arrays within structures –structure within structures – structures and functions – Unions – size of structures – bit fields.

UNIT III

Pointers: accessing the address of s variable –declaring, initialization of pointer variable –accessing a variable through its pointer – chain of pointers – pointer expressions – pointer increment and scale factors – pointer and arrays – pointers and character strings – array of pointers – pointers as function arguments – function returning pointers – pointers to functions – pointers and structures. Files: defining opening, closing a file. I/O Operation on files –error handling during I/O Operations –random access to file – command line arguments.

UNIT IV

Basic concepts of Object oriented programming – Benefits of OOP's – Application of OOP – Structure of C++ program– specifying a class – defining member function- nesting of member function-array of object – friend function –constructor- parameterized constructor- copy constructor- destructor.

UNIT V

Defining operator overloading- overloading unary operator –overloading binary operator – rules for operator overloading-inheritance-single inheritance-multilevel inheritance-multiple inheritance-hierarchical inheritance-hybrid inheritance- virtual base class- polymorphism- pointer – pointer to object- this pointer-virtual function-pure virtual function. unformatted I/O operations-formatted console I/O Operation - Files: Introduction-class for file stream operations-opening and closing files.

Text Book:

1. Programming with C (Schaum's Outline Series), Gottfried, Tata McGraw Hill,2006
2. Object-Oriented Programming With C++, PoornachandraSarang, 2nd Edition, PHI Learning Private Limited, New Delhi,2009

Reference Book:

1. The Complete reference , Schildt, Tata McGraw Hill, 2006.
2. C++ Programming ,AL Stevensen ,Wiley 7th Edition ,2003.

3. DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

Unit I:

Digital Logic Circuits: Digital Computers-Logic Gates-Boolean Algebra-Map Simplification-Combinational; Circuits-Flip-flops-Sequential Circuits.

Digital Components: Integrated Circuits-Decoders-Multiplexer-Registers-Shift Registers-Binary Counters-Memory Unit.

Data Representation:Data Types-Complements-Fixed Point Representation-Floating Point Representation-Other Binary Codes-Error Detection Codes.

Unit 2:

Register Transfer And Microoperation:Register Transfer Language-Register Transfer-Bus And Memory Transfer-Arithmetic Micro Operation-Logic Micro Operation-Shift Microoperation-Arithmetic Logic Shift Unit.

Basic Computer Organization And Design: Instruction Codes-Computer Registers-Computer Instructions-Timing And Control-Instruction Cycle-Memory Reference Instructions-Input And Output And Interrupt.

Unit 3:

Microprogrammed Control:Control Memory-Addressing Sequencing-Micro Program Example-Design Of Control Unit.

Central Processing Unit:Introduction-General Register Organization-Stack Organization-Instruction Formats-Addressing Modes-Data Transfer And Manipulation-Programmed Control.

Unit 4:

Pipeline And Vector Processing: Parallel Processing-Pipelining- Arithmetic Pipelining-Risk Pipelining,

Computer Arithmetic: Introduction-Addition And Subtraction-Multiplication Algorithm-Division Algorithm

Unit –V

Input Output Organization- Peripheral Devices- Input Output Interfaces- Asynchronous Data Transfer, Modes Of Transfer, Direct Memory Access, Input Output Processor, Serial Communication

Memory Organization, Memory Hierarchy, Main Memory, Auxiliary Memory, Cache Memory, Associative Memory, Virtual Memory

Text Book:

Computer System Architecture-M.Morris Mano, 3rd Edition, Prentice Hall India-Newdelhi,2008

Reference Books:

1)Digital Principles And Applications ,Donald P Leach, Albert Paul Malvino,2005

2)Computer Organization And Architecture, William Stallings,Phi,2008

3)Digitallogi And Computer Organization,E.V Rajaraman,T. Radhakrishnan,2006

4.SOFTWARE ENGINEERING

Unit 1:

The software Process: Software and software engineering, process models, agile development.

Unit 2:

Modelling: Understanding requirements, Requirements modelling: Scenarios, information, and analysis classes, flow, behaviour, patterns and web applications.

Unit 3:

Quality Management: Quality concepts, review techniques, software quality assurance, software testing strategies and formal model verification.

Unit 4:

Managing Software Projects: Project management concepts, process and project metrics, estimation for software projects and project scheduling.

Unit 5:

Advanced Topics: Software process Improvement and emerging trends in software engineering

Text Book:

Software engineering - A practitioner's approach - 7th Edition - By Roger S. Pressman - McGraw Hill International editions.

Reference Books:

1. Software engineering concepts – Richard Fairley – Tata Mcgraw – hill publishing company limited, Newdelhi 1997.
2. Software engineering – K. L. James, Prentice hall of india pvt. Ltd. , Newdelhi – 2009.
3. Fundamentals of software engineering – Rajib Mall, Prentice hall of india pvt. Ltd. , New Delhi – 2003
4. Analysis and design of information system – by Jams a Sen - Tata Mcgraw - Hill publishing company limited

5.DATA STRUCTURES AND ALGORITHMS**Unit I:**

Introduction: Overview-Definition-Concept of Data Structure-Overview-Implementation-Arrays-Definition-One Dimensional Array-Multidimensional Array-Pointer array-Linked List: Definition-Singly Linked list- Double Linked list-Memory Representation

Unit II:

Stack: Definition-Representation-Operations-Applications-Queues: Definition-Representation-Various Queue Structures-Applications Trees: Definition-Representation-Operations-Types

Unit III:

Divide and Conquer: General Method-Binary Search-Finding the maximum and minimum-Merge sort-Quick sort-Selection

Unit IV:

Greedy Method: General Method-Optimal Storage on tapes-Knapsack problem-Job sequencing with deadlines-Optimal merge patterns-minimum spanning trees-Single source shortest paths

Unit V:

Dynamic Programming: General Method-Multistage Graphs-All pair shortest path-Optimal binary search trees-0/1 Knapsack-Traveling Salesperson problem

Text Book:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, SartajSahni, Galgotia Publications, 2005
2. Fundamentals of Data Structures , Ellis Horowitz, SartajSahni, Galgotia Publications, 2005

Reference Book:

- 1.Data Structures-Seymour Lipschutz-Tata McGrawhill-Year 2006.

6. OPERATING SYSTEM

Unit I:

Introduction: Abstract View Of Operating System-Goals Of Operating System
Overview Of Operating System: Operating System And Computer System-
Efficiency-System Performance And User Convenience-Classes Of Operating System-
Batch Processing System-Multiprogramming System-Time Sharing System-Real Time
Operating System-Distributed Operating System-Modern Operating System.

Unit II:

Process And Threads: Process And Programs-Programmer View Of Process-
Operating System View Of Process-Threads-Case Studies Of Process And Threads.
Scheduling: Preliminaries-Non Preemptive Scheduling Policies-Preemptive
Scheduling Policies.

Unit III:

Memory Management: Managing The Memory Hierarchy-Static And Dynamic
Memory Allocation-Memory Allocation In Process-Reuse Of Memory-Contiguous
Memory Allocation-Non Contiguous Memory Allocation-Paging-Segmentation-
Segmentation With Paging-Kernel Memory Allocation.

Virtual Memory: Virtual Memory Basics-Demand Paging-Page Replacement
Policies-Memory Allocation To A Process-Shared Pages-Memory Mapped Files.

Unit IV:

File System: File System And IOCS- File And File Operations-Fundamental
File Organization-Directory Structures-File Protection-Allocation Of Disk Space-Virtual
File System.

Security And Protection: Overview Of Security And Protection-Goals Of Security
And Protection-Security Attacks-Formal And Practical Aspects Of Security-Encryption-
Authenticity And Password Security-Access Descriptors And Access Control Matrix-
Protection Structures-Capabilities.

Implementation of File Operations: IO Devices-Disk Scheduling-Access Methods.

Unit V:

Process Synchronization: Data Access Synchronization And Control
Synchronization-Critical Section-Race Condition In Control Synchronization-Structure Of
Concurrent Systems-Algorithm Approach Implementing Critical Section-Semaphores-
Conditional Critical Regions-Monitors.

Message Passing: Overview of Message Passing-Implementing Message Passing-
Mailboxes.

Deadlocks: Definition of Deadlock-Deadlocks in Resource Allocation-Handling
Deadlocks-Deadlock Detection and Resolution-Deadlock Prevention-Deadlock
Avoidance.

Text Book:

Operating System-A Concept Based Approach, D.M.Dhamdhere, Second Edition, TMH
Publishing Company, New Delhi,2006.

Reference Books:

1. Operating System, Internals And Design Principles. William Stalling, Phi 2008.
2. An Introduction To Operating Systems, Concepts And Practice. Pramod Chandra P. Bhatt, Phi, 2007.

7. LAB: PROGRAMMING IN C

1. To reverse a given number and check if it is a palindrome.
2. To evaluate Sine Series.
3. To find the nth Fibonacci number.
4. To check if a number is Prime or not.
5. To Sort an Array.
6. To count the occurrences of a number in a set.
7. To check if a number is Adam or Not.
8. To reverse a given String and check if it is a Palindrome.
9. To find Factorial value, Fibonacci, GCD value using Recursion
10. To add and subtract two Matrices
11. To multiply two Matrices
12. To find row wise sum of a matrix of order m X n
13. To solve Quadratic Equation –Switch
14. To perform binary search using Function
15. To find NCR and NPR values using Function
16. To calculate mean, variance and standard deviation using function
17. To prepare Pay Bill – Structure
18. To prepare Mark Sheet – Structure
19. To perform inventory calculations- Structure
20. To demonstrate the use of bitwise operators
21. To prepare Mark Sheet – File
22. To prepare EB Bill- file

8. LAB - C++ PROGRAMMING AND DATA STRUCTURES

1. To find minimum objects using friend two numbers between two class objects using friend function.
2. To overload Binary + operator which adds two complex numbers.
3. To process students mark list using multiple inheritance.
4. Process employee details using hierarchical inheritance.
5. To process family details using hybrid inheritance
6. To sort number using Merge sort.
7. To sort number using quick sort.
8. To sort number using Heap sort.
9. To search a element using linear search using C++.
10. To perform stack operations using pointer.

11. To perform queue operations using pointer.
12. To manipulate singly linked list.
13. To manipulate doubly linked list.
14. To implement binary search using C++.
15. To perform tree traversals.

II YEAR

1. COMPUTER GRAPHICS

Unit – I

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

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Ellipse Generating Algorithms -- Filled Area primitives

Unit – II

Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes– Antialiasing

Unit – III

Two –Dimensional Geometric Transformations : Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems

Unit – IV

Two –Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Unit – V

Three Dimensional Geometric and Modeling Transformations : Translation-Rotation-scaling-other transformations

Three Dimensional Viewing: Viewing pipeline – Viewing coordinates – Projections – Clipping – Three dimensional viewing functions

Text Book:

1. Donald Hearn and Pauline Baker M., Computer Graphics, C Version, Pearson Education, Second Edition Indian Reprint , New Delhi, 2012.

Chapters

Unit – I : 2.1-2.3, 2.5, 2.6, 3.1, 3.2, 3.5, 3.6, 3.11
 Unit – II : 4.1 – 4.8
 Unit – III : 5.1 – 5.5
 Unit – IV : 6.1 – 6.11
 Unit – V : 11.1 – 11.4, 12.1 -12.3, 12.5,12.7

Reference Book:

1. Roy A Plostock, Zhigang Xiang., Schaum's outline of Computer Graphics, Tata McGraw Hill, New Delhi, 2001.

2. COMPUTER NETWORKS**UNIT I – INTRODUCTION**

Data Communications – Networks – Protocols and Standards – Network models – Layered Tasks – The OSI model – Layers in the OSI model – TCP/IP Protocol suite – Addressing.

UNIT II – THE PHYSICAL LAYER AND MEDIA

Data And Signals: Analog and Digital – Periodic Analog signals – Digital signals – Transmission Impairment – Data rate limits – Transmission media – Guided media – Unguided media – Switching – Circuit switched Networks – Datagram Networks – Virtual – Circuit Networks – Structure of a switch – Telephone Network.

UNIT III – DATA LINK LAYER

Error detection and Correction: - Introduction – Block coding – Linear block codes – Cyclic codes – Checksum. Data Link Control: - Framing – Flow and Error control – HDLC – Point-to-Point protocols – Multiple Access: - Random Access – Controlled Access – Channelization.

UNIT IV – NETWORK LAYER

IPV4 Addresses – IPV6 Addresses – Internetworking – Network layer: Address Mapping – Error Reporting, and Multicasting – Network Layer: Delivery, Forwarding and Routing.

UNIT V – TRANSPORT LAYER AND APPLICATION LAYER

Process-to-process Delivery – User Datagram Protocol (UDP) – TCP – SCTP- Congestion control and Quality of Service:- Data Traffic – Congestion – Congestion Control – Examples – Quality of Service – Techniques to improve QOS – Integrated services .

Application Layer: Domain Name System (DNS) – SNMP – Security – Electronic mail

Text Book

Behrouz A.Forouzan, 2008, Data Communication and Networking, Fifth Edition, Tata McGraw Hill, New Delhi.

Reference Books

1. Tanenbaum, A.S., 2001, Computer Networks, PHI, New Delhi, 3rd Edition.
2. Halsall, Fred, 2001, Data communication Computer Network and Open System, , 4th Edition , Pearson education.
3. Black, Uyles.D, 1997, Computer Networks: Practical Standards and Interfacing, 2nd Edition,PHI, New Delhi.
4. Comer Douglas. E, 1999, Computer Networking and Internets, 2nd Edition,PHI, New Delhi.

3.RELATIONAL DATABASE MANAGEMENT SYSTEM

UNIT I:

Introduction: Database system Applications – Purpose of database systems – View of Data – Relational databases – Database Design – Object based semi structured databases - Data storage and Querying – Transaction Management – Database Architecture – Database Users and Administrators.

Relational Model: Structure of Relational databases – Fundamental Relational Algebra Operations – Additional Relational Algebra Operations – Extended Relational Algebra Operations

UNIT II:

Database Design and ER Model: Overview of the Design Process – The Entity-Relationship Model – Constraints - Entity-Relationship diagram - Entity-Relationship Design Issues – Weak Entity sets – Extended E-R features – Database design for Banking Enterprise

Relational Database Design: Features of good Relational Designs – Atomic Domains and First Normal form – Decomposition using functional Dependencies – Functional Dependency Theory - Decomposition using functional Dependencies – Decomposition using Multivalued Dependencies.

UNIT III:

Object based Databases: Overview – Complex Data types – Structured types and Inheritance in SQL – Table Inheritance – Array and Multi set types in SQL – Object Identity and Reference types in SQL –Implementing O-R features – Persistence Programming Languages – Object oriented Versus Object Relational Databases.

UNIT IV:

Storage and File Structure: Overview of Physical Storage Media – Magnetic Disk – RAID – Tertiary Storage – Storage Access – File Organization - Organization of Records in files – Data Dictionary Storage.

Indexing and Hashing: Basic Concepts – Ordered Indices – B++ Tree Index Files – Multiple Key Access – Static Hashing – Dynamic Hashing.

UNIT V:

Transactions: Transaction Concept – Transaction State – Implementation of Atomicity and Durability – Concurrent Executions – Serializability – Recoverability – Implementation of Isolation – Testing for Serializability

Concurrency Control: Lock-based protocols – Timestamp-based protocols - Validation-based protocols.

Recovery System: Failure Classification – Storage Structure – Recovery and Atomicity – Log-based Recovery - Recovery with Concurrent Transactions.

Text Book:

Abraham Silberschatz, Henry F.Korth and S.Sudarshan, Database System Concepts, McGraw Hill International Edition 2006, Fifth Edition.

UNIT I : Chapter 1.1 to 1.3, 1.5 to 1.9, 1.11 & 1.12 and Chapter 2.1 to 2.4

UNIT II : Chapter 6.1 to 6.8 and Chapter 7.1 to 7.6

UNIT III : Chapter 9.1 to 9.9

UNIT IV : Chapter 11.1 to 11.8 and Chapter 12.1 to 12.3, 12.5 to 12.7

UNIT V : Chapter 15.1 to 15.8 , Chapter 16.1 to 16.3, and Chapter 17.1 to 17.5

Reference books:

1. Database Management Systems – Raghu Ramakrishnan & Johannes Gehrke, McGraw Hill International Edition – Third Edition – 2003
2. Database Management Systems - Alexis leon & mathews Leon, “Leon Vikas Publishing, Chennai, 2002.

4.OBJECT ORIENTED PROGRAMMING WITH JAVA

Unit I : Introduction :

The birth of modern programming language C, the need for C++, Java, Importance of Java in the internet, Java applets and applications, security, portability, the byte code. An overview of Java, OOP, Two paradigms, abstraction, the three OOP Principles.

Data Types, Variable and arrays :

Simple types, integers, floating point types, characters, Booleans, variables – declaring variable, dynamic initialization, the scope and life time of variables, type conversion and casting, arrays-one dimensional arrays and multi dimensional arrays.

Unit II :Operators and control statements:

Arithmetic operators, bitwise operators, relational operators, logical operators, assignment operators, ternary operators, operator precedence. Control statements – if, switch, while, do-while, for nested loops, break, continue. All with examples

Classes and Inheritance:

Class fundamentals, declaring objects, assigning object references variables, introducing methods, constructors, overloading method, using objects as parameters, argument passing, returning objects, recursion, use of static and final key word, nested and inner class, using command line arguments. Inheritance – basics, using super, creating a multi level hierarchy, when constructor are called, method overriding, dynamic method dispatch, using abstract classes, using final with inheritance, Wrapper classes.

Unit III :Packages and Interfaces:

Packages, defining a package, use of CLASSPATH, package example, access protection, importing packages, Interfaces – defining an interface, implementing interfaces, applying interfaces, variables in interfaces, extending interfaces.

Exception Handling :

Fundamentals, exception types, uncaught exception, using try and catch, multiple catch clauses, nested try statements, throw, throws, finally, Java’s built in exception, creating exception subclasses, using exception.

Unit IV: Multi Threaded programming :

The java thread model, thread priorities, synchronization, thread class and runnable interface, the main thread, creating a thread, creating multiple threads, using is Alive[] and join[], inter thread communication.

String Handling :

String constructors, string length, special operations, character extraction, string comparison, searching strings, modifying a string, string buffer.

Unit V : Input/Output :

Java I/O classes and Interfaces, File – directories, using filename filter, the stream classes, the byte streams-input stream, output stream, file input stream, file output stream, byte array in put stream, byte array output stream, random access files. The character streams-Reader, Writer, FileReader, FileWriter, char ArrayReader, CharArrayWriter, BufferedReader, BufferedWriter. Serialization, Serialiabel, Externalizable, Object Output, Object Output Stream, Object Input, Object Input Stream.

TEXT BOOKS:

1. Patrick Naughton and Herbert Schildt, “The Complete Reference – Java 2”, Tata McGrawHill, 3rd Edition, 2000.

REFERENCES:

1. Aaron Walsh and John Fronckowiak, “ Java Programming Bible”,IDG Books, 1st Edition, 2000, India.
2. E.Balaguruswamy, “Programming with JAVA A Primer”, Tata McGrawHill, 2nd Edition, 2000.

5. WEB TECHNOLOGY**UNIT I**

Introduction – History of the Internet – Services and Accessibility – Uses – Protocols – Internet Standards – HTML – Introduction – HTML Document – Head Section – Body Section – HTML Forms – Java Script – Introduction – Language Elements – Objects of Java Script – Other Objects – Arrays.

UNIT II

Dynamic HTML - CSS – Document Object Model – Event Handling – Filters and Transitions – Data Binding

UNIT III

Web Servers and Servlets - Tomcat web server, Introduction to Servelets: Lifecycle of a Servelet, JSDK, The Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues

UNIT IV

Introduction to JSP - The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat

UNIT V

JSP Application Development - Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages – Sharing Session and Application Data – Memory Usage Considerations

Text Book:

1. Web Technology – A Developers Perspective – N P Gopalan, J Akilandeswari, Prentice Hall of India Pvt. Ltd., New Delhi, 2008 (Units I and II).
2. Core SERVLETS AND JAVA SERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson, Pearson Education India (Units III, IV and V)

Reference Books:

1. Mastering Javascript, J Jaworski, BPB Publications, 1999
2. HTML Complete Reference

6. DATA MINING

UNIT I:

Introduction - Data mining functionalities-classification of data mining systems-major issues in data mining.

Data warehousing and OLAP Technology for data mining: Data warehouse-Multidimensional Data Model- Data Warehouse implementation- Further development of data cube technology –From data warehousing to data mining.

UNIT II:

Data Preparation: Preprocess the data- Data Cleaning- Data integration and Transformation- Data Reduction-Discretization and concept Hierarchy generation.

Data mining Primitives, Languages and system Architectures: Data mining Primitives: Data mining task-Data mining query language-Designing GUI based on a data mining query language- Architectures of Data Mining.

UNIT III:

Concepts Description: Characterization and comparison: Data Generalization and Summarization-based characterization –Analytical Characterization – Mining class comparisons-Mining descriptive and statistical measures in large databases- Concept description.

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 from association mining to correlation analysis –constraint-based association mining.

UNIT IV:

Classification and Prediction: Issues Classification by decision tree induction- Bayesian Classification – Classification by Back propagation –Classification based on concepts from association rule mining- other classification methods –prediction- classifier accuracy.

UNIT V:

Cluster Analysis: Type of data in cluster analysis-categorization of major clustering methods-partitioning methods- hierarchical methods- density-based methods- grid based methods based clustering methods-outlier analysis.

Text Book:

Data mining Concepts and Techniques - Jiawei Han, Micheline Kamber -Morgan Kaufman Publishers- 2001-Chapter 1 to 8.

Reference Books:

1. Data Mining Methods – Rajan Chattamvelli – N.K. Mehra Narosa Publishing House Private Ltd. – 2009.
2. Data Mining Theory And Practice - K.P Soman Shyam Diwakar V.Ajay – Asoke K. Ghosh Prentice Hall of India Pvt Ltd. – 2006
3. Data Mining Explained - Delmates Hancock – Digital Press – 2001.
4. Data Mining Introductory and Advanced Topics - Margaret T. Dunham - Pearson Edition - 2003.
5. Data Warehousing in the Real World – Sam Antony, Dennis Murray - Pearson Edition - 1997.
6. Advances in Knowledge Discovery and Data Mining – Usama M. Fayyad – MIT Press – 1996.

7. LAB : PROGRAMMING IN JAVA

1. Array and flow control
2. Single inheritance
3. Multiple inheritance
4. Runtime exception and I/O Exception

5. Package creation
6. Multithreading
7. File creation
8. GUI components
9. Event handling (\focus events, key events, paint events, text events, mouse events, window events etc.)
10. Animation and images
11. Designing web page using html
12. Designing web pages using java applet
13. Implementing a simple HTML browser using Java

8. LAB: WEB TECHNOLOGY

1. Simple HTML Pages using Tables, Frames
2. Java Script for a Mathematical Calculator
3. Java Script – Games such as Number Puzzle, Magic Square, Games using Random number generation
4. Online Quiz using Java Script
5. Validation of name, mobile number, date of birth, email id using Java Script
6. Design of style sheets using CSS and using various style attributes like text-decoration, text-transform
7. Java Script for validating XML against a DTD
8. Simple Servlets for handling HTTP Get and Post Requests
9. Servlets using JDBC for display of student results
10. A Simple Search Engine using JSP
11. Creation of a login form and validating the user using JSP
12. A Page Hit Counter using JSP
13. Designing a Web page that accesses a database via JDBC.