

**KAKATIYA UNIVERSITY**  
**WARANGAL-506009**

COURSE STRUCTURE FOR M.SC. (CSC) I YEAR I SEMESTER  
WITH EFFECT FROM 2005-2006

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| PAPER<br>CODE | TITLE                 | WORKLOAD PER WEEK |           | MARKS |
|---------------|-----------------------|-------------------|-----------|-------|
|               |                       | THEORY            | PRACTICAL |       |
| MSCCS111      | DISCRETE MATHEMATICS  | 4                 | --        | 100   |
| MSCCS112      | COMPUTER ORGANIZATION | 4                 | --        | 100   |
| MSCCS113      | OOPS WITH JAVA        | 4                 | --        | 100   |
| MSCCS114      | OPERATING SYSTEMS     | 4                 | --        | 100   |
| MSCCS115      | ADBMS                 | 4                 | --        | 100   |
| MSCCS116      | OOPS LAB              | --                | 4         | 50    |
| MSCCS117      | ADBMS LAB             | --                | 4         | 50    |
| MSCCS118      | OPERATING SYSTEMS LAB | --                | 4         | 50    |

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**MSCCS111                    DISCRETE MATHEMATICS**

**U N I T - I**

FUNDAMENTALS: Sets, Relations and functions, Fundamentals of logic, Logical inferences, First order logic, Quantified propositions, Mathematical induction

ELEMENTARY COMBINATORICS: Combinations and Permutations, Enumeration - with repetitions, with constrained repetitions, The Principle of Inclusion - Exclusion. (Chapter 1-2)

**U N I T -II**

RECURRENCE RELATIONS: Generating functions, Coefficients of Generating functions, Recurrence Relations, Inhomogeneous Recurrence Relations (Chapter-3)

**U N I T - III**

RELATIONS AND DIAGRAMMS: Relations and diagrams, Binary relations, Equivalence relations, Ordering relations, Lattices, Paths and Closures, Directed graphs, Adjacency matrices - Applications, Sorting and Searching (Chapter - 4)

**U N I T - IV**

GRAPHS: Graphs, Isomorphism, Trees, Spanning trees, Binary trees, Planar graphs, Euler Circuits, Hamiltonian graphs, Chromatic numbers, Four-colour problem, Network flows (Chapter 5)

**TEXT-BOOK:**

1. DISCRETE MATHEMATICS FOR COMPUTER SCIENTISTS, BY - J L MOTT, A KANDEL AND T P BAKER

**REFERENCE BOOKS:**

1. DISCRETE MATHEMATICAL STRUCTURE - (TMH) BY - TREMBLEY AND MANOHAR
2. DISCRETE MATHEMATICS WITH ALGORITHMS - (JOHN WILEY) BY - M.O. ALBERTSON AND J.P.HUTCHINSON
3. ELEMENTS OF DISCRETE MATHEMATICS-(TMH, SECOND EDITION) BY - C.L.LIU
4. DISCRETE MATHEMATICS - (PHI, THIRD EDITION) BY - BURNORD KOLMAN
5. DISCRETE MATHEMATICS BY KH ROSSEN (TMH)
6. DISCRETE MATHEMATICS BY S LIPSCHUTZ AND M. LIPSON SCHAUM'S SERIES (TMH)
7. DISCRETE MATHEMATICS FOR COMPUTER SCIENCE BY GARRRY HAGGARD, J. SCHILPF & S WHITE SIDES (THOMSON PRESS)
8. DISCRETE & COMBINATORIAL MATHEMATICS BY RALPH P GRIMALDI (PEARSON EDUCATION)
9. DISCRETE MATHEMATICAL STRUCTURES BY DS MALLIK & M K SEN (THOMSON PRESS)

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**UNIT - I**

LOGIC CIRCUITS: Basic Logic Functions, Synthesis of Logic Functions Using AND, OR, and NOT Gates, Minimization of Logic Expression, Synthesis with NAND and NOR Gates, Practical Implementation of Logic Gates, Flip-Flops, Registers and Shift Registers, Counters, Decoders, Multiplexers, Programmable Logic Devices (PLDs), Field-Programmable Gate Arrays, Sequential Circuits.

BASIC STRUCTURE OF COMPUTER HARDWARE AND SOFTWARE: Functional units, Basic operational concepts, Bus structures, Software, Performance, Distributed Computing.

ADDRESSING METHODS: Basic Concepts, Memory Locations, Main Memory Operations, Addressing Modes, Assembly Language, Basic I/O operations, Stacks and Queues, Subroutines. (Chapter 1, 2.1 to 2.8, A.1 to A.13)

**UNIT - II**

PROCESSING UNIT: Some Fundamental Concepts, Execution of a Complete Instruction, Hardwired Control, Performance Considerations, Micro Programmed Control, Signed Addition and Subtraction, Arithmetic and Branching Conditions, Multiplication of Positive Numbers, Signed-Operand Multiplication, Fast Multiplication, Integer Division, Floating-Point Numbers and Operations. (Chapter 3, 6.4 to 6.10)

**UNIT - III**

INPUT-OUTPUT ORGANIZATION: Accessing I/O Devices, Interrupts, Processor Examples, Direct Memory Access, I/O Hardware, Standard I/O Interfaces, The Motorola 680X0 Family, The Intel 80X86 Family, The Power PC Family, The Alpha AXP Family, Architectural and Performance Comparisons, A Stack Processor. (Chapter 4, 8.1 to 8.6)

**UNIT - IV**

MEMORY: Semiconductor RAM memories, Read-Only Memories, Cache Memories, Performance Considerations, Virtual Memories, Memory Management Requirements.

INTRODUCTION TO COMPUTER PERIPHERALS: I/O Devices, On-Line Storage. (Chapter 5, 9.1, 9.2)

**TEXT BOOK:**

1. COMPUTER ORGANIZATION, TMH (IV EDITION) BY - V.C. HAMACHER

**REFERENCE BOOK:**

1. COMPUTER ORGANIZATION, (PHI) BY - MORIS MANO
2. COMPUTER ARCHITECTURE & ORGANISATION
3. BY - HAYES, (TMH)

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4. 3. COMPUTER SYSTEMS ORGANISATION & ARCHITECTURE BY - CARPINELLI, (ADDISON WESLEY)
5. THE ARCHITECTURE OF COMPUTER HANDWONE AND SYTEMS HANDWONE BY - I ENGLANDER (WILEY)
6. COMPUTER SYTEMS DESIGN AND ARCHITECTURE BY - VP HEURING, HF JORDAN (PEARSON)
7. COMPUTER ORGANIZATION & ARCHITECTURES BY - STALLINGS (PEARSON, PHI)
8. COMPUTER ORGANIZATION & DESIGN BY – PP CHAUDARI (PHI)

## **MSCCS113 OOPS WITH JAVA**

### **UNIT - I**

Object - Oriented Thinking: Messages and Methods – Classes and Instances – Class Hierarchies – Inheritance – Method Binding, Overriding, and Exceptions

A Brief History of Object – Oriented Programming: The History of Java – Client – Side Computing – Java Language Description

Object – Oriented Design: RDD – CRC cards – Components and Behavior – Software Components – Formalizing the Interface – Implementing components Integration of Components

Understanding Paradigms: Program Structure – Types – Access Modifiers – Lifetime Modifiers. (Chapters 1 to 4)

### **UNIT – II**

Data Fields – Constructors – Inheritance – The Java Graphics Model – Multiple Objects of the Same Class

Adding User Interaction – Inner Classes – Interfaces – The Java Event Model – Window Layout.

Understanding Inheritance: An Intuitive Description of Inheritance – Subclass, Subtype, and Substitutability – Forms of Inheritance – Modifiers and Inheritance – The Benefits of Inheritance – The Costs of Inheritance.

Mechanisms for Software Reuse: Substitutability –Combining Inheritance and Composition – Dynamic Composition. (Chapters 5, 6, 8, 10)

### **UNIT - III**

Implications of Inheritance: The Polymorphic Variable – Assignment – Equality Test – Garbage Collection.

Polymorphism: Polymorphic Variables – Overloading – Overriding – Abstract methods – Pure Polymorphism.

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Input and Output Streams: Input Streams – Output Streams – Object serialization – Piped Input and Output – Readers and Writers.

Exception Handling: Information Transmitted to the Catch Block – The Finally Clause – Throwing Exceptions – Passing on Exceptions. (Chapters 11,12,14,16)

#### **UNIT – IV**

The AWT: The AWT Class Hierarchy – User Interface Components – Panels – Dialogs.

Understanding Graphics: Color – Rectangles – Fonts – Images.

Multiple Threads of Execution: Creating Threads – synchronizing Threads.

Collection Classes – Multiple Threads of Execution – Exception Handling.

Applets and Web Programming: Applets and HTML – Security Issues – Applets and Applications – Obtaining Resources Using an Applet – Combining Applications and Applets. (Chapters 7, 13, 18, 20, 21)

#### **TEXT BOOK:**

1. UNDERSTANDING OBJECT-ORIENTED PROGRAMMING WITH JAVA BY – TIMOTHY BUDD (PEARSON)

#### **REFERENCE BOOKS:**

1. THE COMPLETE REFERENCE JAVA 2 (Fourth Edition) BY - PATRICK NAUGHTON & HERBET SCHILDT (TMH)
2. PROGRAMMING JAVA - DECKER&HIRSH FIELD VIKAS PUBLISKING (2001) (THOMSON LEARNING ) (SECOND EDITON)
3. INTRODUCTION TO JAVA PROGRAMMING - Y.DANIEL LIANG PHI(2002)
4. OBJECT ORIENTED PROGRAMMING THROUGH JAVA 2 BY - THAMUS WU (Mc.Graw Hill)
5. JAVA 2 - DIETEL & DIETEL (PEARSON EDUCATION)
6. INTRODUCTION TO JAVA – BALA GURU SWAMY
7. INTRODUCTION TO PROGRAMMIND & OOD USING JAVA – JAINO NINE & FA HOSCH (JOHN WILEY)
8. STARTING OUT WITH JAVA – JONY GADDIS (DREAM TECH PRESS)
9. JAVA PROGRAMMING – SCHAUM’S SERIES
10. OBJECT ORIENTED APPLICATION DEVELOPMENT USING JAVA – ER DOXE ETC. (THOMSON PRESS)
11. THINKING IN JAVA –BY – BRUCE ECKEL (PEARSON)
12. PROGRAMMING & PROBLEM SOLVING WITH JAVA – JM SLACK (THOMSON)
13. COMPUTING CONCEPTS WITH JAVA2 ESSENTIALS - CAY HORSTMANN (JOHNWILEY)
14. JAVA PROGRAMMING ADVANCED TOPICS – J WIGGLESWORTH, P LUMBY (THOMSON LEARNING)

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## **MSCCS114 OPERATING SYSTEMS**

### **UNIT - I**

Computer System Overview – The Memory Hierarchy – I/O Communication Techniques.  
Operating System Overview – The Evolution of Operating Systems – Microsoft Windows Overview – Modern UNIX Systems – Linux.  
Process Description and Control – Process States – Process Description – Process Control – UNIX SVR 4 Process management.  
Threads, SMP, and Micro kernels – Processes and Threads – symmetric Multiprocessing – Micro Kernels. (Chapters 1 to 4)

### **UNIT - II**

CONCURRENCY: Mutual Exclusion and Synchronization – Principles of Concurrency – Mutual Exclusion : Hardware Support – Semaphores – Monitors – Message Passing – Readers / Writers problem.

Concurrency: Deadlock and Starvation – Principles of Deadlock – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Dining Philosophers Problem – UNIX Concurrency Mechanisms. (Chapters 5, 6)

### **UNIT - III**

Memory Management – memory management Requirements – Memory Partitioning - Paging – Segmentation.  
Virtual Memory – Hardware and Control Structures – Operating System Software.  
Unprocessor Scheduling – Types of Processor Scheduling – Scheduling Algorithms – Traditional UNIX Scheduling. (Chapters 7, 8, 9)

### **UNIT - IV**

I/O Management and Disk Scheduling – I/O Devices – Organization of the I/O Function – Operating System Design Issues – Disk Scheduling – Disk Cache.

File Management – File Organization and Access – File Directories – File Sharing – record Blocking – Secondary Storage Management – UNIX File Management. (Chapter 11, 12)

### **TEXT BOOK:**

1. OPERATING SYSTEMS - BY – WILLIAM STALLINGS (V Edition)

### **REFERENCE BOOKS:**

1. OPERATING SYSTEMS A MODERN PERSPECTIVE (Second Edition)  
BY – GARY NUTT (PEARSON)
2. APPLIED OPERATING SYSTEM BY – SILER SCHATZ, GALVIN (JOHN WILEY)
3. MODERN OPERATING SYSTEM BY – TANANBAM (PHI)
4. OPERATING SYSTEM PRINCIPLES BY – SILBERSCHATZ, GALIVN GAGNE (JOHN WILEY)

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5. OPERATING SYSTEMS BY – DM DHAMDHERE (TMH)
6. UNDER STANDING OPERATING SYSTEMS BY – IM FLYNN, AM MCHOCS (THOMSON PRESS)
7. OPERATING SYTEMS – DIETEL (PEARSON)
8. OPERATING SYSTEMS – RC JOSHI, S. TAPASWI (DREAM TECH)

## **MSCCS115 ADBMS**

### **UNIT – I**

DATABASE APPLICATION DEVELOPMENT:

SQL: QUERIES, CONSTRAINTS, TRIGGERS: Nested Queries – Complex Integrity Constraints in SQL – Triggers and Active Databases – Designing Active Databases.

DATABASE APPLICATION DEVELOPMENT: Accessing Databases from Applications – JDBC Classes and Interfaces – SQLJ. (Chapters 5 to 6)

### **UNIT - II**

OBJECT – DATABASE SYSTEMS: Structured Data Types – Operations on Structured Data – Encapsulation and ADTs – Inheritance – Objects, OIDs, and Reference Types – Database Design for an ORDBMS – ORDBMS Implementation Challenges – OODBMS. (Chapters 23)

### **UNIT - III**

DATA WATEHOUSING AND DEDUCTIVE DATABASE: Data Warehousing and Decision Support: Introduction to Decision Support - OLAP: Multidimensional Data Model – Multidimensional Aggregation Queries – Window queries in SQL: 1999 – Finding Answers Quickly – Implementation Techniques for OLAP – Data Warehousing – Views and Decision Support – View materialization – Maintaining Materialized Views.

Deductive Databases: Introduction to Recursive Queries – Theoretical Foundations – Recursive Queries with Negation. (Chapters 25, 24.1, 24.2, 24.3)

### **UNIT – IV**

DATA MINING AND DISTRIBUTED DATABASES: Data Mining: Introduction to Data Mining – Counting Co-occurrences – Mining for Rules – Tree-Structured Rules – Tree-Structured Rules – Clustering – similarity Search over Sequences – Incremental Mining and Data Streams – Additional Data Mining Tasks.

Parallel and Distributed Databases: Introduction – Architectures for Parallel Databases – Introduction to Distributed Databases – Distributed DBMS Architectures – Storing Data in a Distributed DBMS – Distributed Catalog Management – Updating Distributed Data. (Chapters 26, 22.1, 22.2, 22.6 to 22.9, 22.11)

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## **TEXT BOOK**

1. DATABASE MANAGEMENT SYSTEMS BY – RAGHU RAMAKRISHNAN . GEHRKE (IIIrd EDITION) (TMH)

## **REFERENCE BOOKS**

1. FUNDAMENTALS OF DATABASE SYSTEMS (Third Edition)
2. BY - ELMASRI & NAVATHE (PEARSON EDUCATION 2002)
3. DATABASE SYSTEM CONCEPTS (IV Edition) BY - SILBER SCHATZ, KORTH G. SUDARSHAN (TMH 2002)
4. DATABASE MANAGEMENT SYSTEMS BY - ALEXI'S LEON AND MATHEWS LEON ( LION VIKAS -2002)
5. DATABASE MANAGEMENT SYSTEMS (II Edition) - GERALD. V. POST
6. MODERN DATABSE MANAGEMENT (IV Edition) BY - F.R.MC.FADDEN, J.A.HOFFER, M.B.PRESCOTT(Addison Wisley 2000)
7. DATABASE MANAGEMENT (III Edition) BY - PRATT and J.J. ADAMSKI (THOMSON EDUCATION-2002)
8. DATA WARE HOUSING, DATA MINING, & OLAP- ALEX BERSON, SIMTH (TMH)
9. DATABASE APPLICATION DEVELOPMENT & DESIGN-MANINO(MCGRAW HIL)
10. DATABASE SYSTEMS CONNOLY, BEGG (PEARSON)
11. DATABASE SYSTEM IMPLEMENTATION – GARCIA, MOLNA, ULLMAN, WIDON (PHI)
12. A FIRST COURSE IN DATABESE SYSTEMS - ULLMAN, WINDON (PEARSON)
13. DATA WARE HOUSING, MICHEAL COREY, MICHEAL ABBEY IAN ABRAMSON, BEN TAUB, TMH
14. BUILDING DATA MINING APPLICATIONS FOR CRM, - ALEX BERSON, STEPHEN SMITH, KURT THEARLING, TMH
15. DATA MINING TECHNIQUES, ARUN K. PUJARI, UNIVERSITIES PRESS.
16. 15. WARE HOUSING WITH SQL SERVER 7.0 TECHNICAL REFERENCE, SHIRIN. J. (PHI)
17. DATA WARE HOUSING IN THE REAL WORLD, ANAHORY S & THURAY, (PEARSON)
18. DATA WARE HOUSING, C.S. R. PRABHU, PHI
19. ROB. CORONEL, DATABASE SYSTEMS, THOMSON TECHNOLOGY.
20. DATABASE SYSTEMS CONNOLY, BEGG (PEARSON)
21. DATABASE SYSTEM IMPLEMENTATION – GARCIA, MOLINA, ULLMAN, WIDON (PHI)
22. A FIRST COURSE IN DATABESE SYSTEMS - ULLMAN, WINDON (PEARSON)
23. DATA MINING – JAIWEI HAN, M KAMBER (ELSERVEIR SCIENCE INDIA)

## **MSCCS116 OOPS LAB**

1. Write a Java Program for Sorting a given list of names in ascending order using command line arguments.
2. Write a Java Program to multiply two given matrices.
3. Programs Illustrating Overloading & Overriding methods in Java.
4. Programs Illustrating the Implementation of Various forms of Inheritance. (Ex. Single, Hierarchical, Multilevel inheritance....)
5. Program which illustrates the implementation of multiple Inheritance using interfaces in Java.
6. Program illustrates the implementation of abstract class.

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7. Programs to create packages in Java.
8. Program to Create Multiple Threads in Java.
9. Program to Implement Producer/Consumer problem using synchronization.
10. Program to Write Applets to draw the various polygons.
11. Create and Manipulate Labels, Lists, Text Fields, Text Areas & Panels
12. Handling Mouse Events & Keyboard Events.
13. Using Layout Managers.
14. Create & Manipulate the Following Text Areas, Canvas, Scroll bars, Frames, Menus, Dialog Boxes.
15. Programs which illustrate the manipulation of strings.
  - a. Ex. 1. Sorting an array of Strings.
16. Frequency count of words & Characters in a text.
17. Programs which illustrates the use of files & Streams.
18. Java Program that reads on file name from the user and displays the contents of file.
19. Java Program that displays the no. of characters, lines & words in a text file.
20. Java Program to display the contents of file along with a line number before each line.
21. java Program to read & write the data using Random Access File.

**TEXT BOOK:**

1. THE COMPLETE REFERENCE JAVA J2SE 5<sup>TH</sup> EDITION BY – HERBERT SCHILDT (TMH)

**MSCCS117 ADBMS - LAB**

**OBJECTIVE:**

To Provide hands-on data base design.

Students have to design and implement a database using a commercial database management system and associated development tools. Students will in particular learn development of applications using PL/SQL, Developer 2000.

1. Creating Views
2. Writing Assertions
3. Writing Triggers
4. Using PL/SQL the following are to be extended. (Exceptions, Functions, procedures, packages, cursors, collections, Triggers)
5. Creating FORMS Using Developer 2000. (Implementing Trigger based Problems etc)
6. Generating REPORTS.

**RECOMMENDED BOOK:**

1. STARTING OUT WITH ORACLE – JOHN DAY, CV SLYKE (DREAM TECH)

**ADDITIONAL BOOKS:**

1. ORACLE DEVELOPER 2000 – IVAN BAYROSS (BPB)
2. SQL, PL/SQL – PS DESHPANDE (DREAM TECH)
3. ORACLE DATABASE 10G SQL – J PRICE (TMH)

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4. DATABASE SYSTEMS USING ORACLE – N SHAH (PHI)
5. ORACLE FORMS DEVELOPERS HANDBOOK – LULUSHI (PEARSON)
6. ORACLE SQL AND PL/SQL HANDBOOK – JA PALINSKI (PEARSON)

**MSC118      OPERATING SYSTEMS LAB**

1. Simulate the following CPU Scheduling algorithms
  - a) Round Robin
  - b) SJF
  - c) FCFS
  - d) Priority
2. Simulate all file allocation strategies.
  - a) Sequential
  - b) Indexed
  - c) Linked
3. Simulate MVT and MFT
4. Simulate all File organization techniques.
  - a) Single level directory
  - b) Two level
  - c) Hierarchical
  - d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm Dead Lock Prevention.
7. Simulate all Page replacement algorithms.
  - a) FIFO
  - b) LRU
  - c) LFU
  - d) Etc....
8. Simulate Paging Techniques of memory management.
9. Shell Programming.
  - a) Writing Simple shell scripts
  - b) Control structures – sequence, selection, iteration
  - c) Pipes & Redirections
  - d) Passing arguments to shell programs
  - e) Simple programs using system calls
10. UNIX System Administration:
  - a) User account maintenance
  - b) Security
  - c) Print jobs
  - d) Backup
  - e) Package installations
  - f) Resource management
  - g) Device drivers

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|------------|------------------------------------|-------------------|-----------|-------|
|            |                                    | THEORY            | PRACTICAL |       |
| MSCCS121   | COMPUTER NETWORKS                  | 4                 | --        | 100   |
| MSCCS122   | AUTOMATA THEORY & FORMAL LANGUAGES | 4                 | --        | 100   |
| MSCCS123   | UNIX NETWORK PROGRAMMING           | 4                 | --        | 100   |
| MSCCS124   | SYSTEM SOFTWARE                    | 4                 | --        | 100   |
| MSCCS125   | WEB TECHNOLOGIES                   | 4                 | --        | 100   |
| MSCCS126   | WEB TECHNOLOGIES LAB               | --                | 4         | 50    |
| MSCCS127   | UNP LAB                            | --                | 4         | 50    |
| MSCCS128   | INTERNET PROGRAMMING LAB           | --                | 4         | 50    |

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## **MSCCS121 COMPUTER NETWORKS**

### **UNIT - I**

COMPUTER NETWORKS AND THE INTERNET: What is the Internet?, What is a Protocol?, The Network Edge, The Network Core, Access Networks and Physical Media, Delay and Loss in Packet-Switched Networks, Protocol Layers and Their Service Models, Internet Backbones, NAPs, and ISPs, A Brief History of Computer Networking and the Internet.

APPLICATION LAYER: Principles of Application Layer Protocols, The World Wide Web: HTTP, File Transfer: FTP, Electronic Mail in the Internet, DNS - The Internet's Directory Service. (Chapter 1 and Chapter 2.1 to 2.5)

### **UNIT - II**

TRANSPORT LAYER: Transport-Layer Services and Principles, Multiplexing and Demultiplexing Applications, Connectionless Transport: UDP, Principles of Reliable Data Transfer, Connection-Oriented Transport: TCP, Principles of Congestion Control. (Chapter 3.1 to 3.6)

### **UNIT - III**

NETWORK LAYER AND ROUTING: Introduction and Network Service Models, Routing Principles, Hierarchical Routing, Inter Protocol, Routing in the Internet, What's Inside a Router?. (Chapter 4.1 to 4.6)

### **UNIT - IV**

LINK LAYER AND LOCAL AREA NETWORKS: The Data Link Layer: Introduction, Services, Error Detection and Correction Techniques, Multiple Access Protocols and LAN's, LAN Addresses and ARP, Ethernet, Hubs, Bridges, and Switches, IEEE 802.11 LANs, PPP: The Point-to-Point Protocol, Asynchronous Transfer Mode (ATM), X.25 and Frame Relay. (Chapter 5.1 to 5.10)

### **TEXT BOOK:**

1. COMPUTER NETWORKING A TOP-DOWN APPROACH FEATURING THE INTERNET BY - JAMES F. KUROSE AND KEITH W. ROSS (PEARSON)

### **REFERENCE BOOKS:**

1. BUSINESS DATA COMMUNICATION & NETWORKS By - FITZ GERALD (Jhon Wiley)
2. DATA & COMPUTER COMMUNICATIONS - W STALLINGS (PEARSON, PHI)
3. COMPUTER COMMUNICATIONS & NETWORKING TOPOLOGIES - MA GALLO, V.M. HANCOCK (THOMSON)
4. DATA COMMUNICATION & COMPUTER NETWORKS - R. AGARWAL, BB TIWARI (VIKAS)
5. COMPUTER NETWORKS - AS TANENBAUM (PHI)
6. COMPUTER NETWORKS - BLACK (PHI)
7. UNDERSTANDING COMMUNICATIONS & NETWORKS - WA SHAY (THOMSON)

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## **MSCCSCS122**

### **AUTOMATA THEORY AND FORMAL LANGUAGES**

NOTE: One of the bits in each question should be a problem.

#### **U N I T - I**

FINITE AUTOMATA AND REGULAR EXPRESSIONS : Preliminaries, Finite state systems, Non-deterministic finite automata (NFA), Deterministic finite automata (DFA), NFA TO DFA conversion Regular expressions, interconversions, Two-way finite automata, finite automata with output, State minimization applications.

PROPERTIES OF REGULAR SETS : Pumping Lemma, closure properties of regular sets. (Chapters 1, 2, 3.1 and 3.2)

#### **U N I T - II**

CONTEXT FREE GRAMMARS (CFG) : Context free grammars Derivation tree, simplification of context - Free grammars, Normal forms. (Chapter 4.1 to 4.6)

PUSHDOWN AUTOMATA: Informal description, Definitions, pushdown automata design. (Chapter 4 and 5)

#### **U N I T - III**

PROPERTIES OF CONTEXT FREE LANGUAGES (CFL): Pumping Lemma, closure properties, decision algorithms for CFLs.

TURING MACHINES (TM): The turing machine & model, computable languages and functions, design of TM, modification of TM, Church's hypothesis. (Chapter 6 and 7)

#### **U N I T - IV**

RECURSIVE & RECURSIVELY INNUMERABLE LANGUAGES: UNDECIDABILITY: Properties of recursive and recursively innumerable languages, Universal turing machine, post correspondence problem. Decidable and Undecidable problems; examples, universal turing machine, Rice's theorem, undecidability of CFLs & they being regular.

THE CHOMSKY HIERARCHY: Regular grammars, Unrestricted grammars, interconversions between regular grammars and finite automata, context - sensitive languages, elementary treatment of languages. (Chapter 8.1 to 8.8 and chapter 9)

#### **TEXT BOOK:**

1. INTRODUCTION TO AUTOMATA THEORY LANGUAGES AND COMPUTATION By - J.E. HOPCROFT, J.D. ULLMAN (Narosa)

**Note:** For Examples refer the book. Introduction to computer Theory – DIA Cohen (John Wiley)

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## **REFERENCE BOOKS:**

1. INTRODUCTION TO COMPUTER THEORY - DAVIEL I.A.COHEN (John wiley, IInd Edition)
2. INTRODUCTION TO LANGUAGES AND THEORY OF COMPUTATION By - JOHN C. MARTIN (Second Edition TMH)
3. THEORY OF COMPUTATION By - CHANDRA SEKHARAN & MISRA (PHI)
4. INTRODUCTION TO AUTOMATA THOERY, LANGUAGES & COMPUTATION - JE HOPFCROFT, R. MOTWANI, JD ULLMAN (PEARSON)
5. THE THEORY OF COMPUTATION BERNARD M MORET (PEARSON)
6. INTRODUCTION TO THEORY OF COMPUTATION - M SIPSER (THOMSON)
7. INTRODUCTION TO THEORY OF COMPUTER SCIENCE - EV KRISHNA MURTHY (EWP)
8. AN INTRODUCTION TO FORMAL LANGUAGES & AUTOMATA - PETER LINZ (NAROSA)
9. AUTOMATA & COMPULABILITY - DC KOZEN (SPINGER)
10. THOERY OF COMPUATATION - SK AZAD (DHANPAT RAI & CO)

## **MSCCS123 UNIX NETWORK PROGRAMMING**

### **U N I T - I**

Interprocess Communication: Introduction, File and Record Locking, Simple Client-server Pipes, FIFO's, Streams and Messages, Name Spaces, System V IPC, Message Queues, Semaphores, Shared Memory, Socket and TLI.

(Chapters 3, 3.1 to 3.12)

### **U N I T - II**

A Network Primer Communication Protocols: Introduction, TCP/IP, XNS, SNA, NetBIOS, OSI Protocol, UUCP, Protocols Comparisons. (Chapters 4, 5, 5.1 to 5.8)

### **U N I T - III**

Berkeley Sockets: Introduction, Overview, Unix Domain Protocols, Socket Addresses, Elementary Socket System Calls, Simple Examples, Advanced Socket System Calls, Reserved Ports, Stream Pipes, Passing File Descriptors, Socket Options, Aszyuchronous I/O, Input/Output Multiplexing, Out-of-Band and Data, Sockets and Signals, Internet Superserver, Socket Implementation. (Chapters 6, 6.1 to 6.17)

### **U N I T - IV**

Transport, Overview, Transport Endpoint Addresses, Elementary TLI Functions, Simple Example, Advanced TLI Functions, Streams, TLI Implementation, Stram Pipes, Passing File Descriptors, Input/Output Multiplexing, Asynchronous I/O, Out-of-Band Data. (Chapters 7, 7.1 to 7.13)

## **TEXT BOOK:**

1. UNIX NETWORK PROGRAMMING BY W. RICHARD STEVENS

Duly approved by the Standing Committee of the Academic Senate

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## **REFERENCE BOOKS:**

1. UNIX SYSTEMS PROGRAMMING – K.A. ROBBINS, S. ROBBINS (PEARSON)
2. UNIX THE C ODYSSEY – M. GANDHI, SHETTI, SHAH (BPB PUBLICATIONS)

## **MSCCS124      SYSTEM SOFTWARE**

### **U N I T – I**

BACKGROUND: Introduction, System Software and Machine Architecture, The Simplified Instructional Computer (SIC), SIC Machine Architecture, SIC/XE Machine Architecture, SIC Programming Examples, Traditional (CISC) Machines, VAX Architecture, Pentium Pro Architecture, RISC Machines, Ultra SPARC Architecture, Power PC Architecture, Cray T3E Architecture.

ASSEMBLERS: Basic Assembler Functions, A Simple SIC Assembler, Assembler Algorithm and Data Structures, Machine-Dependent Assembler Features, Instruction Formats and Addressing Modes, Program Relocation, Machine-independent Assembler Feature, Literals, Symbol-Defining Statements, Expressions, Program Blocks, Control Sections and Program Linking, Assemblers Design Options, One-Pass Assemblers, Multi-Pass Assemblers, Implementation Examples, MASM Assembler, SPARC Assembler, AIX Assembler. (Chapters 1, 2)

### **U N I T – II**

LOADERS AND LINKERS: Basic Loader Functions, Design of an Absolute Loader, A Simple Bootstrap Loader, Machine-Dependent Loader Features, Relocation, Program Linking, Algorithm and Data Structures for a Linking Loader, Machine-Independent Loader Features, Automatic Library Search, Loader Options, Loader Design Options, Linkage Editors, Dynamic Linking, Bootstrap Loaders, Implementation Examples, MS-DOS Linker, SunOS Linkers, Cray MPP Linker. (Chapters 3)

### **U N I T – III**

MACRO PROCESSOR: Basic Macro processor Functions, Macro Definition and Expansion, Macro Processor Algorithm and Data Structures, Machine-Independent Macro Processor Features, Concatenation of Macro Parameters, Generation of Unique Labels, Conditional Macro Expansion, Keyword Macro Parameters, Macro Processor Design Options, Recursive Macro Expansion, General-Purpose Macro Processors, Macro Processing within Language Translators. (Chapters 4)

### **U N I T – IV**

COMPILERS: Compiler Functions, Grammars, Lexical Analysis, Syntactic Analysis, Code Generation, Machine-Dependent Compiler Features, Intermediate Form of the Program, Machine-Dependent Code Optimization, Machine-Independent Compiler Features, Structured Variables, Machine-Independent Code Optimization, Storage Allocation, Block-Structured Languages, Compiler Design Options, Division into Passes, Interpreters, P-Code compilers, Compiler-Compilers. (Chapters 5)

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**TEXT BOOK:**

1. SYSTEM SOFTWARE AN INTRODUCTION TO SYSTEMS PROGRAMMING -By LELAND L. BECK - (ADDISON WESLEY)

**REFERENCE BOOK:**

1. SYSTEM SOFTWARE AND OPERATING SYSTEMS -By DHAMDHERE - TMH 2nd Edition
2. SYSTEM PROGRAMMING - DONOVON

**MSCCS125    WEB TECHNOLOGIES****U N I T - I**

MULTITHREADING: Introduction, Class Thread: An Overview of the Thread Methods, Thread States: Life Cycle of a Thread, Thread Priorities and Thread Scheduling, Thread Synchronization, Producer/Consumer Relationship without Thread Synchronization, Producer/Consumer Relationship with Thread Synchronization, Producer / Consumer Relationship: The Circular Buffer, Daemon Threads, Runnable Interface, Thread Groups.

JAVA DATABASE CONNECTIVITY (JDBC): Introduction, Database Systems, Relational Database Model, Relational Database Overview: The Books.mdb Database, Structured Query Language, A First Example, Reading, Inserting and Updating a Microsoft Access Database, Transaction Processing. (Chapter 15 and 18)

**U N I T - II**

SERVLETS: Introduction, Overview of Servlet Technology, Downloading the Java Servlet Development Kit, Handling HTTP GET Requests, Handling HTTP POST Requests, Session Tracking, Multitier Applications: Using JDBC from a Servlet, Electronic Commerce, Servlet Internet and World Wide Web Resources.

REMOTE METHOD INVOCATION (RMI): Introduction, Case Study: Creating a Distributed System with RMI, Defining the Remote Interface, Implementing the Remote Interface, Define the Client, Compile and Execute the Server and the Client. (Chapter 19 and 20)

**U N I T - III**

NETWORKING: Introduction, Manipulating URLs, Reading a File on a Web Server, Establishing a Simple Server (Using Stream Sockets), Establishing a Simple Client (Using Stream Sockets), Client/Server Interaction with Stream Socket Connections, Connectionless Client/Server Interaction with Datagrams, Client/Server Tic-Tac-Toe Using a Multithreaded Server, Security and the Network. (Chapter 21)

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## **UNIT - IV**

JAVABEANS: Introduction, Bean Box Overview, Preparing a Class to Be a Java Bean, Creating a Java Bean: Java Archive Files and the jar Utility, Adding Beans to the Bean Box, Connecting Beans with Events in the Bean Box, Adding Properties to a Java Bean, Creating a Java Bean with a Bound Property, Specifying the Bean Info Class for a Java Bean, JavaBeans World Wide Web Resources. (Chapter 25)

### **TEXT BOOK:**

1. JAVA How to Programming BY DEITEL & DEITEL (PEARSON Education - Third Edition-2001)

### **REFERENCE BOOKS:**

1. JAVA TUTORIAL CONTINUED – CAMPIONE (Addison Wesley)
2. THE COMPLETE REFERENCE JAVA 2 (Fourth Edition) BY - PATRICK NAUGHTON & HERBET SCHILDT (TMH)
3. PROGRAMMING JAVA - DECKER&HIRSH FIELD VIKAS PUBLISKING (2001) (THOMSON LEARNING ) (SECOND EDITON)
4. INTRODUCTION TO JAVA PROGRAMMING - Y.DANIEL LIANG PHI(2002)
5. OBJECT ORIENTED PROGRAMMING THROUGH JAVA 2 BY - THAMUS WU (Mc.Graw Hill)
6. JAVA 2 - DIETEL & DIETEL (PEARSON EDUCATION)
7. INTRODUCTION TO JAVA – BALA GURU SWAMY
8. INTRODUCTION TO PROGRAMMIND & OOD USING JAVA – JAINO NINE & FA HOSCH (JOHN WILEY)
9. STARTING OUT WITH JAVA – JONY GADDIS (DREAM TECH PRESS)
10. JAVA PROGRAMMING – SCHAUM’S SERIES
11. OBJECT ORIENTED APPLICATION DEVELOPMENT USING JAVA – ER DOXE ETC. (THOMSON PRESS)
12. THINKING IN JAVA –BY – BRUCE ECKEL (PEARSON)
13. PROGRAMMING & PROBLEM SOLVING WITH JAVA – JM SLACK (THOMSON)
14. COMPUTING CONCEPTS WITH JAVA2 ESSENTIALS - CAY HORSTMANN (JOHNWILEY)
15. JAVA PROGRAMMING ADVANCED TOPICS – J WIGGLESWORTH, P LUMBY (THOMSON LEARNING)

### **MSCCS126      WEB TECHNOLOGIES LAB**

Programs are to be practiced on the basis of topics covered in corresponding theory paper.

### **MSCCS127      UNIX NETWORK PROGRAMMING - LAB**

Programs Using UNIX or LINUX

- 1) Shell Programming
- 2) Simple Program using the commands - PS, Nohup, Wail, Kill, Nice, At, Batch, Cron, Sh, Cd, Empr etc.
- 3) File Locking & Record Locking

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- 4) Pipes
- 5) Message Queues
- 6) FIFO
- 7) Semaphore
- 8) Client-Server example.
- 9) Shared memory
- 10) Socket Programming

**BOOKS FOR REFERENCE:**

1. UNIX THE C ODYSSEY – M. GANDHI, SHETTI, SHAH (BPB PUBLICATIONS)
2. UNIX NETWORK PROGRAMMING - W. RICHARD STEVENS

**MSCCS128      INTERNET APPLICATIONS LAB**

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COURSE STRUCTURE FOR M.SC. (CS) II YEAR I SEMESTER  
WITH EFFECT FROM 2006-2007

| PAPER CODE | TITLE                             | WORKLOAD PER WEEK |           | MARKS |
|------------|-----------------------------------|-------------------|-----------|-------|
|            |                                   | THEORY            | PRACTICAL |       |
| MSCCS211   | ARTIFICIAL INTELLIGENCE           | 4                 | --        | 100   |
| MSCCS212   | SOFTWARE ENGINEERING              | 4                 | --        | 100   |
| MSCCS213   | .NET PROGRAMMING                  | 4                 | --        | 100   |
| MSCCS214   | CRYPTOGRAPHY AND NETWORK SECURITY | 4                 | --        | 100   |
| MSCCS215   | DATA WAREHOUSING AND MINING       | 4                 | --        | 100   |
| MSCCS216   | .NET LAB                          | --                | 4         | 50    |
| MSCCS217   | J2EE LAB                          | --                | 4         | 50    |
| MSCCS218   | GUI LAB                           | --                | 4         | 50    |

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# **MSCCS211      ARTIFICIAL INTELLIGENCE**

## **U N I T - I**

ARTIFICIAL INTELLIGENCE: ITS ROOTS AND SCOPE, AI: HISTORY AND APPLICATIONS : From Eden to ENIAC: Attitudes toward Intelligence, Knowledge, and Human Artifice, Overview of AI Application Area

ARTIFICIAL INTELLIGENCE AS REPRESENTATION AND SEARCH: Introduction, The Propositional Calculus, The Predicate Calculus, Using co Rules to Produce Predicate Calculus Expressions, Application: A Logic-Based Financial Advisor. (Chapters 1 and 2)

## **U N I T - II**

STRUCTURES AND STRATEGIES FOR STATE SPACE SEARCH:

Introduction, Graph Theory, Strategies for State Space Search, Using the State Space to Represent Reasoning with the Predicate Calculus.

HEURISTIC SEARCH: Introduction, An Algorithm for Heuristic Search, Admissibility, Monotonicity, and Informed ness, Using Heuristics in Games, Complexity Issues.

CONTROL AND IMPLEMENTATION OF STATE SPACE SEARCH:

Introduction, Recursion-Based Search, Pattern-Directed Search, production Systems, The Blackboard Architecture for Problem Solving. (Chapters 3, 4 and 5)

## **U N I T - III**

REPRESENTATION AND INTELLIGENCE: THE AI CHALLENGE:

KNOWLEDGE REPRESENTATION: Issues in Knowledge Representation, A Brief History of AI Representational Systems, Conceptual Graphs: A Network Language, Alternatives to Explicit Representation, Agent Based and Distributed Problem Solving.

STRONG METHOD PROBLEM SOLVING: Introduction, Overview of Expert System Technology, Rule-Based Expert Systems, Model-Based, Case Based, and Hybrid Systems, Planning. (Chapters 6 and 7)

## **U N I T - IV**

REASONING IN UNCERTAIN SITUATIONS: Introduction, Logic-Based Abductive Inference, Abduction: Alternatives to Logic, The Stochastic Approach to Uncertainty. (Chapter 8)

## **TEXT BOOK**

1. ARTIFICIAL INTELLIGENCE By George F Luger, Pearson Education.

## **REFERENCE BOOKS :**

1. ARTIFICIAL INTELLIGENCES By Ritch & Neight.

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2. INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS By D.W. Patterson (PHI-2001)
3. ARTIFICIAL INTELLIGENCE By Patrick Henry Winston
4. PRINCIPLES OF ARTIFICIAL INTELLIGENCE (Narosa)
5. Artificial Intelligence By Shiart Russel Peter Novvig (PHI)

## **MSCCS212      SOFTWARE ENGINEERING**

### **UNIT – I**

INTRODUCTION TO SOFTWARE ENGINEERING: The Evolving Role of Software – Software – The Changing Nature of Software – Software myths.

A GENERIC VIEW OF PROCESS: Software Engineering-A Layered technology – A Process framework – The capability Maturity Model Integration (CMMI) – Process Patterns – Process Assessment – Personal and Team Process Models – process Technology – Product and Process

PROCESS MODELS: Prescriptive Models – The waterfall Model – Incremental Process Models – Evolutionary Process Models – Specialized Process Models – The Unified Process. (Chapters 1, 2 and 3)

### **UNIT- II**

SOFTWARE ENGINEERING PRACTICE: Software engineering Practice – Communication Practice – Planning Practices – Modeling Practices – Construction Practice – deployment

SYSTEM ENGINEERING: Compute-Based systems – The System Engineering Hierarchy – Business Process Engineering: An Overview – Product Engineering:An Overview – System Modeling

REQUIRMENT ENGINEERING: A Bridge to Design and Construction – Requirements Engineering Tasks – Initiating the Requirements Engineering Process – Eliciting Requirements – Developing Use – Cases – Building the analysis Model – Negotiating Requirements – Validating Requirements.

BUILDING THE ANALYSIS MODEL: Requirements Analysis – Analysis Modeling Approaches – Data Modeling Concepts – Object-oriented Analysis – Scenario-Based Modeling – Flow-Oriented Modeling – Class-Based Modeling – Creating a Behavioral Model. (Chapters 5, 6, 7 AND 8)

### **UNIT – III**

DESIGN ENGINEERING: Design within the Context of Software Engineering – design Process and Design Quality – Design Concepts – The Design Model – Pattern-Based Software Design.

CREATING AN ARCHITECTURAL DESIGN: Software Architecture – Data Design – Architectural Styles and Patterns – Architectural Design – Assessing Alternative Architectural Designs – Mapping Data Flow into Software Architecture.

MODELING COMPONENT-LEVEL DESIGN: What is a Component? – Designing Class-Based Component-Level Design – Object Constraint Language – designing Conventional Components. (Chapters 9, 10 and 11)

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## **UNIT – IV**

PERFORMING USER INTERFACE DESIGN: The Golden Rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – Design Evaluation.

RISK MANAGEMENT: Reactive vs. Proactive Risk Strategies – Software Risks – Risk Identification – Risk Projection – Risk Refinement – Risk Mitigation, Monitoring, and Management – The RMMM Plan.

QUALITY MANAGEMENT: Quality Concepts – Software Quality Assurance – Software Reviews – Formal Technical Reviews – Formal Approaches to SQA – Statistical Software Quality Assurance – Software Reliability – The ISO 9000 Quality Standards – The SQA Plan. (Chapters 12, 25 and 26)

### **TEXT BOOK:**

1. SOFTWARE ENGINEERING BY R.S. PRESSMAN (Mc. Graw Hill Sixth Edition)

### **REFERENCE BOOKS:**

1. SOFTWARE ENGINEERING BY GHEZZI (PHI)
2. SOFTWARE ENGINEERING FUNDAMENTALS BY BEHFOROZ AND HUDSON OXFORD UNIVERSITY PRESS
3. SOFTWARE ENGINEERING BY FAIRLEY (Mc.Graw Hill)

## **MSCCS213     .NET PROGRAMMING**

### **UNIT - I**

Fundamentals of Visual Basic, Exception handling, windows forms, Control Classes, Different Types of Boxes, Labels, Buttons, Panels. (Chapters 1 to 7)

### **UNIT - II**

WINDOWS FORMS: Different types of Bars, Menus, Views.

OBJECT - ORIENTED PROGRAMMING: Classes and objects constructors and destructors, inheritance, modifiers, Interfaces, Polymorphism, Vate Binding, Graphics handling and File handling. (Chapters 8 to 13)

### **UNIT - III**

WEB FORMS: Working with webforms, Web forms and HTML, The Web control class, Web Forms and Boxes, Web Forms and Buttons, Validation Controls, Ad Rotators, Web Forms and HTML controls. (Chapters 14 to 19)

### **UNIT - IV**

DATA ACCESS WITH ADO.NET : Accessing data with the server explorer, Data adapters and Data sets, Binding Controls to databases, Handling databases in code, Database access in

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Web Applications. Creating user Controls, Web user Controls, and Multithreading creating Windows services, Web Services and Deploying applications. (Chapters 20 to 25)

**TEXT BOOK:**

1. VB.NET PROGRAMMING (BLACK BOOK) BY STEVEN HOLZNER (Dreamtech- 2003)

**REFERENCE BOOKS:**

1. VB.NET PROGRAMMING BY T. GADDIS (Dreamtech)
2. Microsoft Visual Basic. Net step by step By Halvorsen (PHI)
3. OOP with Microsoft Visual Basic.Net By Reynold Hachtte (PHI)

**MSCCS214 CRYPTOGRAPHY AND NETWORK SECURITY**

**U N I T - I**

INTRODUCTION:- Attacks, Services, and Mechanisms, Security Services.

CONVENTIONAL ENCRYPTION: CLASSICAL TECHNIQUES: Steganography, Classical Encryption Techniques.

CONVENTIONAL ENCRYPTION: MODERN TECHNIQUES:- Simplified DES. The Data Encryption Standard, Differential and Linear Cryptanalysis, Block Cipher Modes of Operation.

**U N I T - II**

CONFIDENTIALITY USING CONVENTIONAL ENCRYPTION:- Traffic Confidentiality, Random Number Generation.

PUBLIC-KEY CRYPTOGRAPHY:- Principles of Public-Key Cryptosystems, The RSA Algorithm, Diffie-Hellman Key Exchange, Elliptic Curve Cryptography.

INTRODUCTION TO NUMBER THEORY:- Prime and Relatively Prime Numbers, Fermat's and Euler's Theorem, Euclid's Algorithm, The Chinese Remainder Theorem, Discrete Logarithms.

**U N I T - III**

MESSAGE AUTHENTICATION AND HASH FUNCTIONS:- Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs.

DIGITAL SIGNATURES AND AUTHENTICATION PROTOCOLS:- Digital Signatures, Authentication Protocols, Digital Signature Standard.

**U N I T - IV**

ELECTRONIC MAIL SECURITY: S/MIME.

IP SECURITY: IP Security Overview, IP Security Architecture, Encapsulating Security Payload, Key Management. FIREWALLS: Firewall Design Principles, Trusted Systems. (Chapters 1,2,4,5,6,7,8,10,12,13 and 16)

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**TEXT BOOK:**

1. CRYPTOGRAPHY AND NETWORK SECURITY principles and Practice FOURTH Edition By Willam Stallings (Pearson Asia)

**REFERENCE BOOKS:**

1. DAVIES & PRICE : SECURITY FOR COMPUTER NETWORKS - Wiley (1984)
2. MAYER & MATYAS : CRYPTOGRAPHY – Wiley B. SCHNEIER : APPLIED CRYPTOGRAPHY - (John Wiley)

**MSCCS215      DATA WAREHOUSING AND DATA MINING****UNIT-I**

What is Data Mining, Data Mining Functionalities, and classification, Data Mining Task, Integrating a Data Mining System, Major issues in Data Mining, Descriptive Data Summarization, and Data Cleaning. (Chapters 1,2.1 to 2.3)

**UNIT-II**

Data Integration and transformation, Data reduction, Data Discrimination and concept Hierarchy Generation.

What is Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Complementation, From Data Warehouse to data mining. (Chapters 2.4 to 2.6, 3)

**UNIT-III**

Basic Concepts of frequent patterns, Frequent Item sets, mining methods, Association rules, what is classification and Prediction, Classification By Decision Tree Induction, Bayesian Classification, Rule-Based Classification. (Chapters 5.1, 5.2.1, 5.2.2, 5.3.1, 6.1, 6.2, 6.3.1, 6.3.3, 6.4.1, 6.4.2, 6.5.1 and 6.5.2)

**UNIT – IV**

What is Cluster analysis, types, Partitioning methods, Hierarchical methods, Density Based methods, Grid Based methods, and Model-Based Clustering methods, Outlier analysis? (Chapters 7.1 to 7.8 and 7.11)

**TEXT BOOK:**

1. DATA MINING CONCEPTS & TECHNIQUES BY JIAEEI HAN, MICHELINE & KAMBER (2<sup>nd</sup> EDITION) Harcourt India (Elsevier Publishing Company)

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## **REFERENCE BOOKS:**

1. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION
2. Data Mining Techniques – ARUN K PUJARI, University Press.
3. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
4. Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY STUDENT EDITION
5. DATA WAREHOUSING, DATA MINING & OLAP BY ALEX BERSON AND STEPHEN J. SMITH (TMH)

## **MSCCS216      J2EE LAB**

The following Topics are to be covered.

J2EE Platform, XML Fundamentals, Application Servers, RMI, Servlet Programming, JSP Basics, JSP: tag extensions, Javamail, Java Messaging Service, Java Transactions, Java Cryptography Extensions, EJB architecture and design, session Beans and Business logic, Entity Beans, Message Driver Beans, J2EE Connect or architecture, Web Services.

### **Text Book:**

1. J2EE 1.4 Bible, Dreamtech-2003 (Chapters 1 to 20)

### **Reference Books:**

1. Mastering EJB by Roman (John Wiley)
2. J2EE by Wrox (SPD)
3. J2EE 1.4 By A.E.Walsh (Dreamtech)

## **MSCCS217      .NET PROGRAMMING LAB**

- The concepts covered in the corresponding theory paper are to be implemented.

## **MSCCS218 :      GUI PROGRAMMING (USING VC ++ ) LAB**

The following Concepts are to be implemented.

- a) IDE
- b) Object Oriented programming facilities
- c) Classes in C ++
- d) I/O in C ++
- e) Windows Programming
- f) MFC

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- g) Wizards
- h) Active X Controls
- i) COM and DHTML
- j) DLL

**TEXT BOOK:**

1. VC ++ 6 COMPLETE REFERENCE BY C.H. PAPPAS AND W.H. MURRAY (TMH)

**REFERENCE BOOKS:**

1. Visual C ++ 6 Programming By Steve Holzner ( Dream Tech)
2. Visual C ++ By Holzner (PHI)
3. Visual C ++ BY Sphar (Phi/Microsoft)
4. Visual C ++ By Sanghri (Vikas)

**KAKATIYA UNIVERSITY  
WARANGAL-506009**

COURSE STRUCTURE FOR M.SC. (CS) II YEAR II SEMESTER  
WITH EFFECT FROM 2006-2007

|          |                |                                   |
|----------|----------------|-----------------------------------|
| MSCCS221 | MAJOUR PROJECT | SATISFACTORY/<br>NOT SATISFACTORY |
|----------|----------------|-----------------------------------|

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