

THIRUVALLUVAR UNIVERSITY
MASTER OF SCIENCE
DEGREE COURSE
M.Sc. INFORMATION TECHNOLOGY
UNDER CBCS
 [with effect from 2008-2009]

The Course of Study and the Scheme of Examinations

Year / Semester	Subject	Paper	Title of the Paper	Ins. Hrs/ Week	Credit	Exam hrs	Max.Marks		
							IA	Uni. Exam.	Total
I Year I Semester	Core	Paper I	Principles of Communication System	4	4	3	25	75	100
	Core	Paper II	Data Structures Using C	4	4	3	25	75	100
	Core	Paper III	Data Base Management System	4	4	3	25	75	100
	Core Practical		Data Structures and DBMS Lab	9	5	-	-	-	-
	Elective (a) or	Paper I	Computer Architecture	3	3	3	25	75	100
	Elective (b)		Discrete Mathematics						
I Year II Semester	Core	Paper IV	Operating System	4	4	3	25	75	100
	Core	Paper V	Data Communication Networks	4	4	3	25	75	100
	Core	Paper VI	Object Oriented Programming Using Java	4	4	3	25	75	100
	Core Practical	Practical I	Data Structures and DBMS Lab	9	5	3	25	75	100
	Core Practical	Practical II	Network Programming and Java Lab	9	5	3	25	75	100
			Human Rights	2	2	3	25	75	100
	Elective (a) or	Paper II	Software Engineering	3	3	3	25	75	100
	Elective (b)		E-Commerce						
II Year III Semester	Core	Paper VII	Telecommunication Switching Techniques	4	4	3	25	75	100
	Core	Paper VIII	Internet Programming	4	4	3	25	75	100
	Core	Paper IX	Computer Graphics	4	4	3	25	75	100
	Core Practical		Internet Programming and Graphics Lab	8	4	-	-	-	-
	Elective (a) or	Paper III	Signals and Systems	3	3	3	25	75	100
	Elective (b)		Multimedia Systems						

M.Sc. Information Technology: Syllabus (CBCS)

Year / Semester	Subject	Paper	Title of the Paper	Ins. Hrs/ Week	Credit	Exam hrs	Max.Marks		
							IA	Uni. Exam.	Total
	Elective IV (Non-Major Subject)		Programming in C	3	3	3	25	75	100
II Year IV Semester	Core	Paper X	Research Methodology	4	4	3	25	75	100
	Core Practical	Practical III	Internet Programming and Graphics Lab	8	4	3	25	75	100
	Core Practical	Practical IV	Visual Programming Lab	8	4	3	25	75	100
	Core		*Project Work / Dissertation and <i>viva voce</i>	12	6	3	50	150	200
	Elective (a) or	Paper V	Optical and Satellite Communication	3	3	3	25	75	100
	Elective (b)		Network Security						
			Total	120	90				2200

THIRUVALLUVAR UNIVERSITY
M.Sc. INFORMATION TECHNOLOGY

SYLLABUS

UNDER CBCS

[with effect from 2008-2009]

I SEMESTER

PAPER I

PRINCIPLES OF COMMUNICATION SYSTEM

Objective

The aim of this paper is to introduce the principles of communications, digital communications, and data communications.

UNIT-I

Spectral Analysis and Random Variable Process: Spectral characteristics of a periodic signal - Spectra of common signals related to communication - Cross correlation, auto correlation and power/energy density spectra - random signals and process - Modeling noises.

UNIT-II

Analog Modulation Systems: Basic principles of AM, FM, and PM - Spectra, power consideration, receiver's characteristics and deduction of AM, FM and PM systems performance - Threshold effects reduction.

UNIT-III

Base Band Data Communication: Sampling and quantizing - PCM, ADPCM, DM, ADM - Base band pulse shaping - Binary data formats - Base band transmission - ISI, correlative coding, optimum SNR - Matched filter deduction.

UNIT-IV

Digital Modulation: Digital modulation - Coherent binary modulation techniques - Coherent quadrature modulation techniques - Non-coherent binary modulation - M-array modulations - Performance of digital modulation systems based on probability of error, bandwidth, and ISI.

UNIT-V

Spread Spectrum Techniques: Fundamental concepts - Direct sequence spread spectrum - Frequency hopping spread spectrum.

Text Books

1. Herbert Taub and Donald L Shilling, Principles of Communications Systems, 2nd edition, McGraw Hill Publishing, 1990
2. Simon Haydn, Principles of Communication, Prentice Hall of India, 1990.

References

1. Thomas and Chandrasekar - communication Theory, 1st Edition year 2006, TMH, New Delhi.
2. Lathi B.P, Analog and Digital Communication Systems, Prentice Hall of India, 1992.
3. J.G. Proakis, Digital Communication, McGraw Hill, 4th edition, 1995.
4. Edward. A. Lee and David. G. Messerschmitt, Digital Communication, 3rd edition, 2003, Allied Publishers.
5. J Marvin.K.Simon, Sami. M. Hinedi and William. C. Lindsey, Digital Communication Techniques: Signal Design and Detection, 1994, Prentice Hall of India.

PAPER II

DATA STRUCTURES USING C

Objective

The essential goal is to acquire skills and knowledge in imperative programming and data structures.

UNIT-I

Introduction to C Programming language: Programming in C - data types, operators, hierarchy and associativity, expressions, control structures. Functions - Structure of a C program - Preprocessing - Arrays, structures and unions - Pointers - Pointers to arrays - Structures and functions - Storage class initialization.

UNIT-II

Introduction to Data Structures: Introduction - The Stack: Definitions and examples - Representing Stacks in C - Examples: infix, Postfix, and Prefix.

UNIT-III

Queues and Lists: Queue and its sequential representation - Linked list - List in C - Examples - Other list Structures.

UNIT-IV

Trees: Binary trees - Binary Tree representations - Huffman Algorithm - Representing lists as Binary Trees - Trees and their applications - Game Trees.

UNIT-V

Sorting: Introduction - Exchange Sorts - Selection and Tree sorting - Insertion Sort - Merge and Radix Sorts - Searching: Basic Search techniques - Tree Searching - Search Trees - Hashing.

Text Books

1. Byron Gottrifried, Programming with C, McGraw Hill, 1990. (Unit I)
2. Yedidyah Langsam, Moshe J Augenstein, Aaron M Tenenbaum, Data Structures using C, Prentice Hall, 2nd Edition, 1996. (Unit II-V)

References

1. Lipschutz - Data Structures (Special Indian Edition) 2006, TMH, New Delhi
2. Jean Paul Tremblay, Paul Sorenson, An Introduction to Data Structures with Applications, McGraw Hill, 1984.
3. Ellis Horowitz, Sartaj Sahni, Fundamentals of Data Structures, Galgotia,
4. S.S. Khandare, "Programming in C & C++", S. Chand & Co, 2006

PAPER III
DATA BASE MANAGEMENT SYSTEM

Objective

The primary goal of this subject is to provide the complete knowledge on the object-oriented approach of databases. This serves the skill on Functional Dependencies, Normalization and data base design. It provides the complete set of administration tools on databases.

UNIT-I

Concepts For Object-Oriented Databases - Object Identity, Object Structure, and Type Constructors - Encapsulation of Operations, Methods, and Persistence - Type Hierarchies and Inheritance - Complex Objects - Other Object-Oriented Concepts - Object Databases Standards, Languages and Design - Overview of Object Model of ODMG - The Object Definition Language - The Object Query Language - Overview of C++ Language Binding - Object Database Conceptual Design - Overview of the CORBA standard for Distributed Objects - Object Relational and Extended Relational Database Systems: Evolution and Current Trends of Database Technology - The Informix Universal Server - Object Relational Features of Oracle 8 - An overview of SQL 3 - Implementation 7 Related Issues for Extended Type Systems - The Nested Relational Data Model.

UNIT-II

Functional Dependencies and Normalization for Relational Database: Informal Design Guidelines for Relational Schemas - Functional Dependencies - Normal Forms Based on Primary Keys - General Definitions of Second and Third Normal Forms - Boyce-Codd Normal Form - Relational Database Design and further Dependencies: Algorithms for Relational Database schema Design - Multivalued Dependencies and Fourth Normal Form - Join Dependencies and Fifth Normal Form - Inclusion Dependencies - Other Dependencies and Normal Forms - Practical Database Design and Tuning: The Role of Information Systems in Organizations - The Database Design Process - Physical Database Design in Relational Databases - An Overview of Database Tuning in Relational Systems - Automated Design Tools.

UNIT-III

Database System Architecture and The System Catalog: System Architectures For DBMS - Catalogs for Relational DBMS - System Catalog Informations in Oracle - Other Catalog Information Accesses by DBMS software Modules - Data Dictionary and Data Repository Systems - Query Processing and Optimization: Translating SQL Queries into Relational Algebra - Basic Algorithms for Executing Query Operations - Using Heuristics in Query Optimization - Using Selectivity and Cost Estimates in Query Optimization - Query Optimization in Oracle - Semantic Query Optimization - Transaction Processing Concepts - Transaction and System Concepts - Desirable Properties of Transactions - Schedules and Recoverability - Serializability of Schedules - Transaction Support in SQL.

UNIT-IV

Concurrency Control Techniques: Locking Techniques for Concurrency Control - Concurrency Control Based on Timestamp Ordering - Multiversion Concurrency Control Techniques - Validation Concurrency Control Techniques - Granularity of Data Items and Multiple Granularity Locking - Using Locks for Concurrency Control in Indexes - Some other Concurrency Control Issues - Database Recovery Techniques: Recovery Concepts - Recovery Techniques Based On Deferred Update - Recovery Techniques Based on Immediate Update - Shadow Paging - The ARIES Recovery Algorithms - Recovery In Multidatabase Systems - Database Backup and Recovery From Catastrophic Failures - Database Security and Authorization: Database Security Issues - Discretionary Access Control Based on Granting/Revoking of Privileges - Mandatory Access Control for Multilevel Security - Statistical Database Security.

UNIT-V

Enhanced Data Models for Advanced Applications - Active Database Concepts - Temporal Database Concepts - Spatial and Multimedia Database - Distributed Databases and Client - Server Architecture - Distributed Database Concepts - Data Fragmentation, Replication and Allocation Techniques for Distributed Database Design - Types of Distributed Database Systems - Query Processing in Distributed Databases - Overview of Concurrency Control and Recovery in Distributed Databases - An overview of Client - Server Architecture and its Relationship to distributed Databases - Distributed Databases in Oracle-Future Prospects of Client-Server Technology - Deductive Databases - Introduction to Deductive Databases - Prolog/Datalog Notation - Interpretation of Rules .

Basic interface Mechanisms for Logic Programs - Datalog - Programs and their Evaluation - Deductive Database Systems - Deductive Object - Oriented Databases - Applications of Commercial Deductive Database Systems.

Text Books

Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", Addison - Wesley, 2000.

References

1. Raghu Ramakrishnan, Johannes Gehrtee, "Database Management System", Tata McGraw Hill, 2002.
2. Henry F.Korth & Abraham Silberschatz, "Database System Concepts", McGraw, 1997.
3. Jeffrey D.Ullman, "Principles of Database Systems", Galgotia Publishers, 1998.

ELECTIVE

PAPER I

(to choose either A or B)

A) COMPUTER ARCHITECTURE

Objectives

Know and understand the main components of a computer system and the considerations in their design. Know and understand performance measures, as well as their impact on system architecture. Understand the interplay among system components such as design trade-offs.

UNIT-I

Basic structure of computer hardware and software - Addressing methods and machine program sequencing - Computer arithmetic - logic design for fast adders - multiplication - Booth's algorithm - Fast multiplication - integer division - floating point number representation- floating point arithmetic.

UNIT-II

Control unit - instruction execution cycle - sequencing of control signals - hardwired control - PLAs - micro programmed control - control signals - microinstructions - micro program sequencing - Branch address modification - Prefetching of micro instructions - emulation - Bit slices.

UNIT-III

Memory organization-Semiconductor RAM memories- internal organization- Bipolar and MOS devices - Dynamic memories - multiple memory modules and interleaving - cache memories - mapping functions - replacement algorithms - virtual memory - address translations - page tables memory management units - Secondary memory - disk drives - organization and operations - different standards.

UNIT-IV

Input-output organizations - accessing I/ O devices - direct memory access (DMA) - interrupts - interrupt handling - handling multiple devices - device identification - vectored interrupts - interrupt nesting - Daisy chaining - I/ O interfaces - serial and parallel standards - buses - scheduling - bus arbitration - bus standards.

UNIT-V

Introduction to parallel organizations - multiple processor organization - symmetric multiprocessors - cache coherence - non uniform memory access - vector computation - introduction to CISC and RISC - Architectures - Comparison.

Text Books

1. Hamacher C V, Computer Organization, 4th Edition, McGraw Hill, 1997.
2. Stallings William, Computer Organization and Architecture, 6th Edition, Pearson Education, 2003

Reference Books

1. Pal Chaudhary P, Computer Organization and Design, Prentice Hall of India, 2004.
2. Hayes J P, Computer Organization and Architecture, 2nd Edition, Mc Graw Hill, 1998.
3. Tanenbaum A S, Structured Computer Organization, 6th Edition, Prentice Hall, 2006.
4. Kai Hwang and Faye A Briggs, Computer Architecture and Parallel Processing, Mc.Graw Hill, 1985.

B) DISCRETE MATHEMATICS

- 1.
2. Objective
3. The Objective of this subject is :
 - ❖ to understand the concepts of sets, proposition, permutation and combinations.
 - ❖ to familiarize in relations, digraphs and functions, trees, groups and coding.
 - ❖ to help the students for developing the fundamental mathematical knowledge.

UNIT-I

Fundamentals: Sets and subsets - Operations on Sets - Sequences - Division in the integers - Matrices - Mathematical structures.

Logic: Propositions and Logical operations - Conditional Statements - Methods of Proof - Mathematical Induction.

Counting: Permutations - Combinations - The Pigeonhole Principle - Elements of Probability - Recurrence Relations.

UNIT-II

Relations and Digraphs: Product Sets and Partitions - Relations and Digraphs - Paths in relations and Digraphs - Properties of relations - Equivalence Relations - Computer Representation of relations and Digraphs - Manipulation of Relations - Transitive Closure and Warshall's Algorithm.

UNIT-III

Functions: Functions - Permutation Functions - Growth of Functions Topics in Graph Theory: Graphs - Euler Paths and Circuits - Hamiltonian Paths and Circuits - Coloring Graphs

UNIT-IV

Order Relations and Structures: Partially Ordered Sets - External Elements of Partially Ordered Sets - Lattices - Finite Boolean Algebras - Functions on Boolean Algebras - Boolean Functions as Boolean Polynomials.

Trees: Trees - Labeled trees - Tree Searching - Undirected Trees - Minimal Spanning Trees.

UNIT-V

Semigroups and Groups: Binary Operations Revisited - semigroups - Products and Quotients of Semigroups - Groups - Products and Quotients of Groups. Groups and coding: Coding of Binary Information and Error Detection - Decoding and Error Correction

Text Books

Bernard Kolman, Robert C. Busby and Sharon Ross, "Discrete Mathematical Structures", Prentice Hall of India Pvt. Ltd., 1997.

References

1. Korthage R.R., "DISCRETE COMPUTATIONAL STRUCTURES", Academic Press, 1974.
2. Lipschutz - Schaums Outline Series- Discrete mathematics, Special Indian Edition 2nd, 2006, TMH, New Delhi.
3. Preparata, F.P., Yeh R.T., "INTRODUCTION TO DISCRETE STRUCTURES", Addison - Wesley, 1973.
4. Trembley J.P. and Manohar R.P., "DISCRETE MATHEMATICAL STRUCTURES WITH APPLICATIONS TO COMPUTER SCIENCE", TataMcGraw - Hill, 1975.
5. Veerarjan, Discrete mathematics, 1st Edition, 2006, TMH, New Delhi.

II SEMESTER

PAPER IV

OPERATING SYSTEM

Objective

To learn what an operating system is, what its role in a computing system is, how operating systems have evolved over time, and what the various components of an operating system are and how they work. Several real operating system case studies help to understand how the principles studied are used in practice. The role of an operating system in a distributed system is also to be studied.

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Text Books

1. Silberschatz, Galvin, Gagne, Operating System Concepts, 6th Edition, 2003.
2. Pradeep K.Sinha, Distributed OS concepts and Design, IEEE computer Society Press, PHI 1998.

Reference Books

1. Dhamdhare - Operating System a Concept Based Approach, 2nd Edition, 2006, TMH, New Delhi.
2. Harris - Schaums Outlines of Operating Systems, 2005, TMH, New Delhi.
3. Andrew S. Tanenbaum, Modern Operating Systems, Prentice Hall of India, 2nd Edition 2001.
4. Achut S. Godbole and Kahate Atul, Operating Systems & Systems Programming, Tata Mcgraw Hill, 2003.
5. Charles Crowley, Operating systems: A Design Oriented Approach, Tata McGraw Hill, 1999.

PAPER V

DATA COMMUNICATION NETWORKS

Objectives

Understand the challenges of network communication. Understand the basics of network communication. Understand the operation of the protocols that are used inside the Internet.

UNIT-I

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

UNIT-II

Network Layer: Circuit Switching - Packet Switching - Switching and Forwarding - Bridges and LAN Switches - Cell Switching - Inter networking - Routing - Global Internet - Multicast.

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Text Books

1. Larry L.Peterson and Brule S.Davie, Computer Networks - A System Approach, MarGankangmann-Harcourt Asia, Second Edition, 2002 (Unit I, II, III & IV)
2. William Stallings, SNMP, SNMP V2, SNMPV3, RMON 1 and 2, 3rd Edition. Addison Wesley, 6th Indian reprint 2002. (Unit V)

Reference Books

1. Forouzan: Data Communication and Networking, Special Indian Edition 4th Edition 2006, TMH, New Delhi.
2. Carr - Data Communication and Network Security 1st Edition 2007, TMH, New Delhi.
3. J.F Kurose and K.W. Ross, Computer Networking - A top-down approach featuring the internet, Addison Wesley, 2001.
4. William Stallings, Data & Computer Communication, 6th Edition, Pearson Education, 2002.
5. Mani Subramanian, Network Management: Principles and Practice, Addison Wesley, 2000.

PAPER VI

OBJECT ORIENTED PROGRAMMING USING JAVA

Objective

The course focuses on development of skills such as program design and testing using object oriented programming concept as well as the implementation of programs Java.

UNIT-I

Object Oriented Programming: Abstract Data Type (ADT), Encapsulation, Object, Message, Method, Class, Inheritance, Late Binding Polymorphism, Virtual Functions, Abstract Classes, Interface, Generic Classes and Interfaces, Constructors and Destructors, Overloading and Overriding, Copy Constructor.

UNIT-II

JAVA Basics: Importance and features of java, Modifiers, Access Controls, Data types, Expressions, Declarations, Statements and Control Structures, Program Structures, String handling, Packages, Interfaces, Working with java.util Package, Garbage Collection, Object Class.

UNIT-III

Exception Handling, I/O and JDBC: Exception Handling: Fundamentals exception types, uncaught exceptions, throw, throw final, built in exception, creating yourown exceptions. Input Stream and Output Stream: Streams, Byte and Character stream, Predefined streams, Reading and Writing from Console and Files, Buffered Reader and Writer, Serialization, Data Compression, Using Standard Java Packages (lang, util, io, net)

Database: JDBC Architecture, JDBC Basics, JDBC Drivers, Connecting to Database and accessing databases

UNIT-IV

AWT & Event Handling: Creating User interface with AWT, Applets, Applet Life Cycle, Simple Graphics, Fonts and Colors, Events, Listeners, Components, Containers, Working with Layouts, Image Processing, AWT Exceptions Delegation Event Model, Event Classes, Event Listener Interfaces, Adapter and Inner Classes

UNIT-V

Multithreading and Communication: Java Thread Model: Priorities, Synchronization, Messaging, Life Cycle of Thread, Thread class, Runnable interface, Interthread Communication, Suspending, Resuming and Stopping threads Multithreading, Synchronization, Scheduling and Priority of Threads, Sockets, Types of Sockets, Working with URLs, Web browsers and Handlers

Text Books

1. Balagurusamy E, Programming With Java: A Primer, 3rd Edition, Tata Mcgraw Hill, 2007.
2. Bruce Eckel, Thinking in Java, 3rd Edition, Prentice Hall, 2000.

References

1. Thomas Wu- an Introduction to Object Oriented Programming with Java - Special Indian Edition 4th 2006, TMH, New Delhi.
2. Patrick Naughton and Herbertz Schildt, Java-2 The complete Reference, 5th Edition, Tata McGraw Hill.
3. Cay C. Horstmann, Computing Concepts with Java 2 Essentials, John Wiley.

CORE PRACTICAL I

DATA STRUCTURES AND DBMS LAB

Objective

To familiarize the concepts learned in data structures and DBMS.

DATA STRUCTURE USING C

Array implementation
String Manipulation
Sorting and Searching
Linked List
Stacks and Queues
Trees and Graphs

DBMS

1. Study of all SQL commands
2. Implement the concept of Normalization
3. Implement the inventory control system with a reorder level
4. Develop a package for a bank to maintain its customer details
5. Develop a package for the payroll of an organization

CORE PRACTICAL II

NETWORK PROGRAMMING AND JAVA LAB

Objectives

To familiarize the concepts learned in Network and Java. Programs for various Network functions can be written using Java.

Network Programming

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

Java Programming

1. Simple programs to familiarise concepts in Java.
2. Write a Java program using Applet to display any 3 images when 3 buttons in the Border layout are clicked. The image should be displayed at the center.
3. Write a Java program using Applet to display the dialogue and menu in applet.
4. Write a Java program using Applet to create the frames and its controls.
5. Write a Java program using Applet to display the different colors and fonts.
6. Write a Swing program to create Buttons with
 - a) Tool tip text
 - b) Image
 - c) Border
 - d) Short cut Key
7. Write a Swing program to create the Tabbed Panels.
8. Write a Java program to create a color as the background.

HUMAN RIGHTS COMPULSORY PAPER

UNIT-I

Definition of Human Rights - Nature, Content, Legitimacy and Priority - Theories on Human Rights - Historical Development of Human Rights.

UNIT-II

International Human Rights - Prescription and Enforcement upto World War II - Human Rights and the U.N.O. - Universal Declaration of Human Rights - International Covenant on Civil and Political Rights - International Covenant on Economic, Social and Cultural Rights and Optional Protocol.

UNIT-III

Human Rights Declarations - U.N. Human Rights Declarations - U.N. Human Commissioner.

UNIT-IV

Amnesty International - Human Rights and Helsinki Process - Regional Developments - European Human Rights System - African Human Rights System - International Human Rights in Domestic courts.

UNIT-V

Contemporary Issues on Human Rights: Children's Rights - Women's Rights - Dalit's Rights - Bonded Labour and Wages - Refugees - Capital Punishment.

Fundamental Rights in the Indian Constitution - Directive Principles of State Policy - Fundamental Duties - National Human Rights Commission.

Books for Reference:

1. International Bill of Human Rights, Amnesty International Publication, 1988.
2. Human Rights, Questions and Answers, UNESCO, 1982
3. Mausice Cranston - What is Human Rights
4. Desai, A.R. - Violation of Democratic Rights in India
5. Pandey - Constitutional Law.
6. Timm. R.W. - Working for Justice and Human Rights.

7. Human Rights, A Selected Bibliography, USIS.
8. J.C.Johari - Human Rights and New World Order.
9. G.S. Bajwa - Human Rights in India.
10. Amnesty International, Human Rights in India.
11. P.C.Sinha & K. Cheous (Ed) - International Encyclopedia of Peace, Security Social Justice and Human Rights (Vols 1-7).
12. Devasia, V.V. - Human Rights and Victimology.

Magazines:

1. The Lawyer, Bombay
2. Human Rights Today, Columbia University
3. International Instruments of Human Rights, UN Publication
4. Human Rights Quarterly, John Hopkins University, U.S.A.

**ELECTIVE
PAPER II**

(to choose either A or B)

A) SOFTWARE ENGINEERING

Objective

The objective of this subject is to make the student familiar with the principles, management and practical methodology followed in any software engineering project development, its implementation and maintenance.

UNIT-I

Software characteristics - Software Engineering Layers - Software Process - Process Models - Linear Sequential, Evolutionary and Formal Methods - Software Measurement Size Oriented, Function Oriented, Extended Function Point Metrics, Metrics for quality.

UNIT-II

Software Project Planning - Software Scope, Resources - Project Estimation - Problem Based, LOC Based, Process Based Estimation - Estimation Models - COCOMO Model - Software Quality - Quality Assurance - Software Reviews - Formal Technical Reviews - Statistical Quality Assurance - Software Reliability - SQA Plan.

UNIT-III

Software Requirement Analysis - Communication Techniques - Analysis Principles - Software Prototyping - Specification - Software Design Concepts - Effective Modular Design - Cohesion - Coupling - Design Documentation - Real Time and Design Methods - Data, Architecture, Transform and Transaction Mapping, Interface and Procedural Design.

UNIT-IV

Object Oriented Software Engineering - Concepts Identifying the Elements of Object Model - Object Oriented Analysis - Domain Analysis - Object Relationship and Behavior Model Design for Object Oriented Systems - System Design Process - Testing Strategies - Test Case Design and Testing Methods - Metrics for Object Oriented Systems - Class Oriented Metrics - Operation Oriented Metrics - Metrics For Object Oriented Testing and Projects.

UNIT-V

Software Testing - Fundamentals White Box, Black Box, Control Structure Testing - Testing on Specialized Environments, Unit, Integration, Validation, System Testing - Art of Debugging - Software Reengineering - Software Maintenance - Process Model - Reverse Engineering - Forward Engineering - CASE - Building Blocks 0 - Taxonomy I - CASE - Integration Architecture - CASE Repository

Text Book

Rogger S.Pressman, "Software Engineering - A Practioners Approach" McGraw Hill Companies Inc, 1998.

References

1. Pressman - Software Engineering a Practitioner approach, 6th Edition 2006, TMH, New Delhi.
2. Iansommerville, "Software Engineering" Addison Wesley, Fifth Edition, 1986.
3. Carlo Ghezzi, Mehdi Jazayasi, Dino Mandrioloi, "Fundamentals of Software Engineering" PHI Pvt.Ltd., 1991.
4. Richard.E.Fairley,"Software Engineering Concepts", Tata McGraw Hill, First Edition, 1985.

B) E- COMMERCE

Objective

By the end of the course the student should have :

- ❖ a background in electronic commerce as it affects small and medium sized business (SMEs)
- ❖ an understanding of how you can develop and implement an E-commerce strategy for your business
- ❖ an E-commerce business plan based on the adoption of a selected E-commerce strategy.

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Text Book

1. Ravi Kalakota and Andrew B Whinston, *Frontiers of Electronic commerce*, Addison Wesley, 1996

Reference Books

1. Baskar - *E-Commerce Framework Technologies and Applications* 2nd Edition, 2006, TMH, New Delhi.
2. Pete Loshin, Paul A Murphy, *Electronic Commerce*, 2nd Edition, Jaico Publishers 1996.
3. David Whiteley, *e - Commerce: Strategy, Technologies and Applications*, McGraw Hill, 2000.

III SEMESTER

PAPER VII

TELECOMMUNICATION SWITCHING TECHNIQUES

Objective

The objective of the course is to impart theoretical and practical knowledge of the present day telecommunication switching systems and data networks. Topics ranging from the electromechanical switching systems to the voice and data integration systems will be covered. Design of space and time division switching systems will be discussed. The course also deals with data and ATM networks.

UNIT-I

Evolution of Telecommunication Switching And Circuit: Evolution of Public Switched Telecommunication Networks Strowger exchange, Crossbar exchange, Stored program exchange Digital exchange - Basic Tele communication equipment - Telephone handset, Hybrid circuit, Echo suppressors and cancellers, PCM coders, Modems and Relays.

UNIT-II

Electronic Switching: Circuit Switching, Message switching, Centralized stored program switching, Time switching, Spare switching, Combination switching - Digital switching system hardware configuration, Switching system software, Organization, Switching system call processing software, Hardware software integration.

UNIT-III

Telecommunication Signaling and Traffic: Channel associated signaling, Common channel signaling, SS7 signaling protocol, SS7 protocol architecture, Concept of Telecommunication traffic, Grade of service, Modeling switching systems, Blocking models and Delay systems.

UNIT-IV

Integrated Digital Networks: Subscriber loop characteristics, Local access wire line and wire less PCM / TDM carrier standards transmission line codes, Digital

multiplexing techniques, Synchronous, Asynchronous, Plesiocronous multiplexing techniques, SONET/ SDH, Integrated Digital Network (IDN) environment - Principles of Integrated Services Digital Network (ISDN) - Cellular Mobile Communication Principles.

UNIT-V

Data Net Works: Data transmission in PSTN - Connection oriented and Connection less protocols - packet switching - ISO-OSI architecture-Satellite based data networks - Multiple access techniques - LAN, WAN - standards - TCP / IP - Internet - Principle of ATM networks.

Text Book

Viswanathan T, Telecommunication Switching System and Networks, Prentice Hall of India, 1994.

References

1. Ali - Digital Switching System Reliability and Analysis, 1st Edition 2005, TMH, New Delhi.
2. Behrouz Forouzan, Introduction to Data Communication and Networking, McGraw - Hill, 1998.
3. L.S.Lawton, Integrated Digital Networks, Galgotia Publication, New Delhi, 1996.

PAPER VIII

INTERNET PROGRAMMING

Objective

Upon completion of the course the student will be able to:

- ❖ Write client-side JavaScript programs for executing in a Web browser.
- ❖ Do basic HTML design using colors, images, tables, frames, and GUI components such as text boxes, buttons, menus, checkboxes, and radio buttons and develop interactive Web applications that integrate HTML with JavaScript using event handlers.
- ❖ Explain control structures, functions, and arrays, and illustrate how they are used to create JavaScript programs. Also discuss object-oriented programming and the Document Object Model, built-in and custom objects.
- ❖ Create JavaScript applications that use cookies to track and save Web preferences.

UNIT-I

Introduction: Introduction to the Internet and World Wide Web - World Wide Web Consortium (W3C) - History of the Internet History of the World Wide Web - History of SGML -XML Introduction to HyperText Markup Language - Editing HTML - Common Elements - Headers - Linking - Images - Unordered Lists - Nested and Ordered Lists - HTML Tables-Basic HTML Forms

UNIT-II

Dynamic HTML: Dynamic HTML Object Model and Collections, Event Model, Filters and Transitions, Data Binding with Tabular Data Control, Dynamic HTML-Structured Graphics ActiveX Controls, Dynamic HTML-Path, Sequencer and Sprite ActiveX Controls.

UNIT-III

JavaScript: JavaScript, Introduction to Scripting, Control Statements, Functions, Arrays, Objects.

UNIT-IV

XML: Creating Markup with XML -Parsers and Well-formed XML Documents - Parsing an XML Document with msxml - Document Type Definition (DTD) - Document Type Declaration - Element Type Declarations - Attribute Declarations - Document Object Model - DOM Implementations - DOM Components - path - XSL: Extensible Stylesheet Language Transformations (XSLT)

UNIT-V

PERL, CGI AND PHP: Perl - String Processing and Regular Expressions - Form Processing and Business Logic - Server-Side Includes - Verifying a Username and Password - Using DBI to Connect to a Database - PHP - Form Processing and Business Logic - Connecting to a Database - Dynamic Content in PHP

Text Books

1. Deitel & Deitel, *Internet & World Wide Web How to Program, 3rd Edition*, Pearson Education India, 2004.
2. Deitel & Deitel, *XML How to Program*, Pearson Education, 2001.

References

1. God bole - *Web Technologies, TCP/IP to Internet Application Architectures*, 1st Edition - 2005, TMH, New Delhi.
2. Negrino and Smith, *Javascript for the World Wide Web*, 5th Edition, Peachpit Press 2003.
3. Deitel & Deitel, *Perl How to Program*, Pearson Education, 2001.
4. Benoit Marchal, *XML by Example*, 2nd Edition, Que/Sams 2002.

PAER IX COMPUTER GRAPHICS

Objective

The objective of this subject is to provide complete understanding of the theoretical aspects of computer graphics. It provides details of algorithms which facilitate implementation of both 2D and 3D graphics and good understanding of graphics modeling and user interface designs.

UNIT-I

Introduction and Hardware: Representative uses of computer graphics - vector display and raster display architectures - display processor - interactive input devices - output primitives - software portability and graphics standards - conceptual framework for interactive graphics.

UNIT-II

2D graphics: Basic raster graphic algorithms for 2D primitives - scan converting lines - circles - ellipses - filling rectangle - character generation - 2D transformations - 2D clipping - windowing transformation.

UNIT-III

3D graphics: 3D representation methods - 3D transformations - viewing and projections - parallel and perspective projections - hidden line elimination - hidden surface elimination.

UNIT-IV

Graphics Modelling: Curves, Surface and solid modeling - colour model - ray tracing methods - graphic file formats.

UNIT-V

User interface design: Interactive handling models - Input and Output handling window systems.

Text Books

1. Foley, Van Dam, Reiner, Aughes, "Computer graphics Principles and Practice", Addison Wesley, 1997.
2. Hearn and Baker, "Computer graphics", PHI, Ltd., 1995.

References

1. Plastock - Computer Graphics, 2nd Edition - 2006, TMH, New Delhi.
2. William M. Neuman, Robert Sproull, "Principles of interactive computer graphics", Second edition, McGraw Hill, 1989
3. Steven Harrington, "Computer graphics - A Programming Approach", McGraw Hill, 1987

**ELECTIVE
PAPER III**

(to choose either A or B)

A) SIGNALS AND SYSTEMS

Objective

Provides an introduction to continuous-time and discrete-time signals and linear systems. Topics covered include time-domain descriptions (differential and difference equations, convolution) and frequency-domain descriptions (Fourier series and transforms, transfer function, frequency response, Z transforms, and Laplace).

UNIT-I

Continuous Time signal: Energy and Power signals, Exponential and sinusoidal signals, periodicity, Impulse and step signals. Continuous Time systems: Properties- Linearity, stability, causality, memory, invertibility, time invariance. Analysis of LTI System - impulse response – convolution - graphical analysis-properties of convolution, Differential equation representation. Frequency analysis of CT systems - Fourier series Fourier Transform. Properties Convolution, multiplication, correlation, Parseval's relationship, Examples. Inverse relationship between time and frequency, Time- Bandwidth product

UNIT-II

Discrete Time signals: Energy and Power signals, Exponential and sinusoidal signals, periodicity, Impulse and step signals. Discrete Time systems: Properties: Linearity, stability, causality, memory, invertibility time invariance. Representation of systems - impulse response - convolution - Difference equation representation. Frequency analysis of DT systems: Discrete Time Fourier Series Discrete Time Fourier Transforms, Discrete Fourier transform. Properties Convolution, Multiplication, correlation, duality, Examples.

UNIT-III

Filters: Ideal LPF Impulse response. Band pass filter Hilbert Transforms Pre Envelope, BP signals and systems, Phase and Group delay Applications of Fourier analysis to AM, SSB, PAM and FM Application of DTFT in DT sinusoidal AM analysis Z Transforms: Properties Analysis of LTI systems using Z transforms the inverse Z transform - System function. Sampling of CT and DT signals. Sampling Theorem Nyquist rate - Reconstruction - ideal, zero order hold.

UNIT-IV

Random Processes: Review of random variables and pdf. Random processes, statistical averages. Stationary processes, Ergodic processes. Random processes and LTI systems. Random processes in frequency domain Power spectrum of stochastic processes, variance Auto correlation and spectral densities - Properties Power spectral density. Gaussian, Rayleigh, Rice probability density- and White processes, band limited and band pass processes.

UNIT-V

Noise: White noise, Narrow band noise, effective noise temperature and noise figure representation Sinewave contaminated with narrow band noise. Effect of noise in Linear modulation systems AM, SSB, DSBSC. Effect of noise in angle modulation, threshold effect and threshold extension, pre- emphasis and de-emphasis filtering.

Text Books

1. Openheim and Wilsky, Signals and Systems, PHI/ Pearson Education.
2. Simon Haykin, Communication Systems, John Wiley.
3. Proakis & Salehi, Communication Systems Engineering, LPEA.

References

1. Roberts, M.J., Signals and Systems Analysis using Transform Methods and Matlab - 2005, TMH, New Delhi.
2. Hsu - signals and Systems - Special Indian Edition 1st Edition 2006, TMH, New Delhi.
3. C L Phillips .J M. Parr. E A Riskin, Signals, Systems, and transforms, 3rd Edition, Pearson Education.
4. R E Ziemer, W H Tranter, D .R Fannin, Signals and Systems, 4th Edition, Printice Hall
5. Meador Vikas, Analog Signal Processing with Laplace Transform and Active Filter Design, Thomson Pub.
6. B P Lathi, Analog and Digital Communication, Oxford
7. S S Soliman, M D Srinath, Continuous and Discrete Signals and Systems, PHI.
8. B B Lathi, Linear Signal and Systems, Oxford.
9. A Papolious, Probability Random Variables and Random Process, TMH.
10. Stark and Wood, Probability and Random Process with Application to Signal Processing, 3rd Edition, Pearson Education.

B) MULTIMEDIA SYSTEMS

Objective

Provides a basic understanding of the fundamental issues and problems in the representation, manipulation, compression, and delivery of multimedia content such as images, audio and video, particularly in a networked environment

UNIT-I

Introduction: Elements of multimedia systems - Needs and benefits - Converging Technologies - Functions and subsystems - Input - Development - Output.

UNIT-II

Multimedia Hardware: PC Platform - SCSI - MCI - Storage for Multimedia - DVD, CD-ROM - Input, Output and Communication devices.

UNIT-III

Media Software: Basic tools - Image editing tools - Painting and drawing tools - Sound editing programs - Video formats - Quick time - Linking Multimedia objects - OLE and DDE - Office suites - Presentation tools - Authoring tools.

UNIT-IV

Multimedia Building Blocks: Text - Sound - Images - Animation - Video.

UNIT-V

Multimedia Applications: Multimedia and single user - Multimedia on networks.

Text Books

1. Tay Vaughan, Multimedia - Making it Works, 2nd Edition, McGraw Hill, 1997.
2. Judith Jeffcoate, Multimedia In Practice - Technology and Applications, Prentice Hall of India, 1995.

References

1. Parekh- Principles of Multimedia- 2006, TMH, New Delhi.
2. Tay Vaughan - Multimedia making it work - 7th Edition - 2007, TMH, New Delhi.
3. Wlaterworth John A, Multimedia Technology and Applications, Ellis Horowood, 1991.
4. Arch C Luther, Designing Interactive Multimedia, Bantam Books, 1992.
5. Barrett Fox, 3DS Max 6 Animation, McGraw Hill, 2003.
6. Elsom Cook, Principles of Interactive Multimedia, McGraw Hill, 2001.

ELECTIVE

PAPER IV

(NON MAJOR SUBJECT)

PROGRAMMING IN C

UNIT-I

Introduction - History of Computers - Generation of Computers - Classification of computers - Basic Anatomy of a Computer System - Input Devices - Processor - Output Devices - Memory Management - Types of Software - Overview of Operating System

UNIT-II

Overview of C data types - Operators and Expression - History in C - Basic structure of C Programs - Execution of C Program - Sample of C Programs - Character Set - C Tokens - Key words and Identifiers - Constants, Variables Declaration of Variables - Assigning Values to variables - data types - symbolic constants - operators - expressions - evaluation of expressions - precedence of operators - type conversions in expressions - associativity and precedence - I/O operations – Simple programs

UNIT-III

Control flow and arrays: Reading and writing a character - Formatted input and output - Control Statements: if - Switch - Conditional operator - go to - Loop statements: While - do - for - break statement - continue statement - arrays: One dimensional arrays - declaration and intialisation of arrays - two dimensional arrays - multidimensional arrays - string handling functions - Application Programs in Computer Science and Life Science.

UNIT-IV

Functions, structures, unions and pointers: Need for user defined functions - The form of C functions - Return values and their types - calling a function - category of functions - Recursion - functions with arrays - Structures; Structure definition and initialization - Arrays of structures - structure and functions - unions - pointers - understanding pointers - declaring and

initializing pointers - pointer expressions - pointers and arrays - pointer and functions - dynamic memory allocation.

UNIT-IV

File management and preprocessor: Defining a file - opening and closing a file - Input/Output operations on files - error handling during I/O operations - random access to files - Preprocessor - Macro substitution - file inclusion - compiler control directives - command line arguments.

Text Book:

1. E.Balagurusamy, "Computing fundamentals and C programming" Tata McGraw-Hill Publishing Company limited, 2008
2. S.Parthasarathy, Essentials of Programming in C for Life Sciences, Anc Books India Pvt. Ltd., New Delhi, 2008

Reference Books:

1. B.W.Kernighan and D.Ritchie, "The C programming Language", PHI, 1998.
2. Yashavant P.Kanetkar, "Let us C," BPB Publications, 2002.

IV SEMESTER

PAPER X

RESEARCH METHODOLOGY

Objectives

- ❖ To enhance the sprit of data processing.
- ❖ To classify the data and achieve accuracy.
- ❖ To acquire knowledge in the analysis of data.

UNIT-I

Data Processing: Methods of collecting data - Conducting enquires to collect primary data - Sources of Secondary data - Preparation of Schedules - Questionnaires - pre testing and pilot study - Interview Method of enquiry - Editing and Coding the data - Types of research - Different types and their applications.

UNIT-II

Sample Experimentation: Sample surveys - Random Samples - Systematic Samples - Multi stage sample - principles and planning of experiments - presentation of data.

Tabulation Process: Classification and Organisation of Data - Classification by categories and Measurements - Tabulation - Scheme of tabulation - preparation of tabular Schemes - Various method of Securing accuracy in tabulations.

UNIT-III

Probability Analysis: Probability - Rules of probability and its application - Normal and bi-normal - Their properties - Importance of distribution in research studies - Tests of significance - Large & small samples - Analysis of various applications.

UNIT-IV

Measurement Analysis: Measures of central tendency and variations - Mean, Median, Mode - Their relative advantages & disadvantages - Measures and Dispersion - Mean deviation - Standard deviation - Percentile ranks - Correlation and Regression - Association of attributes - Contingency table.

UNIT-V

Interpretation and report writing: Meaning of interpretation - Technique of interpretation - Precautions in interpretation - Significance of report writing - Different steps in writing report - Layout of the research report - Types of reports - Oral presentation - Mechanics of writing a research report - Precautions for writing research reports - Bibliography.

Text Book

C.R.Kothari, "Research methodology methods and techniques". New Age International Ltd., New Delhi, 2001.

Reference

Bordens - Research Design and Methods 6th Edition-2006, TMH, New Delhi.

CORE PRACTICAL III

INTERNET PROGRAMMING AND GRAPHICS LAB

Objective

To implement the concept learned in internet programming and make familiarize with the creation of web based applications.

1. Creating a web page with cascading style sheets and Embedded style sheets.
2. Create a web page with the following.
3. Order form using HTML form elements
4. Validate the details in client side by using Java script
5. Design a web page to perform screen saver animations using Java script
6. Design a web page to display the text file contents using data binding concepts in DHTML.
7. Design a HTML Editor using Java applet.
8. Design a web page for library Management using Java applet and JDBC.
9. Write a Java RMI program to copy a text file from server to client.
10. Design a web page to conduct On-line Quiz using Java server pages.
11. Write a servlet program to do the following.
12. Set the URL of another server.
13. Display the header details during request of a page.
14. Display response header as well as contents during response from the server.
15. Design a web page to demonstrate session tracking Management using Java servlet.

Graphics Lab

1. To implement line drawing algorithms.
2. To implement various transformation schemes.
3. To implement polygon drawing algorithms.
4. To implement line clipping algorithms.
5. To implement polygon clipping algorithms.
6. To implement text clipping algorithms.

CORE PRACTICAL IV

VISUAL PROGRAMMING LAB

Objectives

The students will acquire knowledge on software development using the visual programming languages. This course concentrates on the development of software systems in Visual Basic and Visual C++.

Visual Basic

1. Write a VB project that receives a year number from a text box and month name from list box and displays number of days in the given month. Take care of leap years. Use Lost Focus event for list box.
2. Write a VB project that stores 10 employee records with fields EMPNO, NAME, AGE, SEX and SALARY, in an array. Display data fields in text boxes and provide command buttons to move to desired record.
3. Write a VB project that receives a foreign currency value selected from a list box and converts it into equivalent Indian rupees. (e.g. USD 42.45, Sterling 71.30, D.Mark 25.52, SW Franc 31.58, SaudiRiyal 11.40, French Franc 7.60, UAE Dhiram 11.55, Kuwait Dhinar 140.56)
4. Write a VB project using control array that creates a scientific calculator with appropriate command buttons. Include the following capabilities for the calculator: +, -, *, /, %, power, square root, square and log (base 10).
5. Write a VB project to create a screen saver that displays a list of pictures with 1 second pause in between successive pictures.
6. Write a VB project for commercial bank operations using SB account database, with the following features:
 1. ADD NEW ACCOUNT
 2. DEPOSIT AMOUNT
 3. WITHDRAW AMOUNT (with minimum balance condition)
 4. Calculate simple interest and update balance taking average of last 6 month balance in the account.
 5. CLOSE ACCOUNT.

7. Write a VB project using built in Ax control (Rich Text Box), develop the windows NOTEPAD like editor with File and Edit menus and also display the floating menu whenever necessary.
8. Write a VB project for a Blood Bank that maintains a list of donors with address and their blood group. Provide the following reporting features:
 - i) Search and display the address of a particular donor, given the name in a text box.
 - ii) Display all the donors (using data report)
 - a) in age group 20-30.
 - b) in particular city.
 - c) with particular blood group.
 - d) male donors with particular blood group
 - e) female donors with particular blood group.
9. Write a VB project using Ax DLL or EXE add a class module that would perform the following functions:
 - a) Test whether the given number is perfect or not
 - b) Whether the gn% number Armstrong or not
 - c) Find the factorial of the given number
 - d) sum of digits
10. Write a VB project using Activex X control to create a Textbox that accepts only numeric value. Provide the following properties for the text box: BackColor, Forecolor and Text.

Visual C++

1. Write Visual C++ win32 application program using MFC that creates a new font.
2. Write Visual C++ win32 application program using MFC that displays a message "Hello Good Morning!" wherever the user clicks the mouse button on the client area.
3. Write Visual C++ win32 application program using MFC that allows the user to draw pictures with the help of mouse as a free hand drawing tool.

4. Write Visual C++ win32 application program using MFC that creates a list box and displays name of the states in India.
5. Write Visual C++ win32 application program using MFC that displays line, rectangle, rounded rectangle, ellipse and polygon filled with colors.
6. Write Visual C++ win32 application program using MFC that fills the background of the client area with a bitmap.
7. Write Visual C++ win32 application program using MFC that displays a menu. Choose the menu items using keyboard accelerator keys and display appropriate messages for the selected command, in message box.
8. Write Visual C++ win32 application program using MFC that displays the status of ALT, CTRL, SHIFT, NUM LOCK and SCROLL LOCK keys.
9. Write Visual C++ win32 application program using MFC that displays current mouse coordinates in status bar.
10. Write Visual C++ win32 application program using MFC that creates two push buttons OK and CANCEL on the client area. Buttons should respond to user click over them and display appropriate message.

ELECTIVE

PAPER V

(to choose either A or B)

A) OPTICAL AND SATELLITE COMMUNICATION

Objective

This course is devoted to the analysis and design of a general optical and satellite communication link. Students will understand hardware and performance capabilities and limitations of modern optical and satellite communications.

UNIT-I

Optical Fibers, Sources and Detector: Structure, wave guiding and characteristic modes and configuration, group velocity, dispersion, mode coupling, single mode fiber design - Laser Diodes, light emitting diodes, modal, partition and reflection noise, power coupling, splicing, connectors, PIN - Diode, avalanche photo-diodes. Detector response time.

UNIT-II

Receiver Operation: Probability of error, quantum, limit, receiver sensitivity calculation, performance curves, preamplifiers, light speed circuits, power budget, rise-time budget, line coding, eye-pattern.

UNIT-III

Communication Satellite - Orbit and Description: Orbital period and velocity, effects of orbital inclination, coverage angle and slant range, placement of satellite in a geo-stationary orbit, Satellite description - Communication subsystems, telemetry, command and ranging subsystems, attitude control and electrical power.

UNIT-IV

Earth Station: Earth station antenna types, gain and radiated power, pointing loss, noise temperature, G/T ratio, high power amplifiers, redundancy

configurations, carrier and power combining, low noise amplifiers - redundancy configuration and non-linearity, up converter and down converter - conversion process, hopping and redundancy configurations.

UNIT-V

Applications and Services: Satellite packet communications - ALHOA, slotted ALOHA and packet reservation. Very small aperture terminal (VSAT) networks - technologies and configurations. Mobile satellite (MSAT) networks - Operating environment, low orbital satellites, Iridium satellites.

Text Books

1. Gowar J, Optical Communication Systems, Prentice Hall, 1993.
2. Rody D, Satellite Communication, Prentice Hall, 1989.

Reference Books

1. Selvarajan - Optical fiber Communications Principles and Systems, 1st Edition, 2005, TMH, New Delhi.
2. Senior J, Optical Communication-Principles and Practice, Prentice Hall, 1994.
3. Bhargava et. Al., Digital Communication by Satellite, Prentice Hall, 1992.
4. Ha T, Satellite Communications, McGraw Hill, 1996.

B) NETWORK SECURITY

Objective

The goal of the course is to provide students with a foundation allowing them to identify, analyze, and perhaps solve network-related security problems in computer systems. The course covers fundamentals of number theory, authentication, and encryption technologies, as well as the practical problems that have to be solved in order to make those technologies workable in a networked environment, in particular in the wide-area Internet environment.

UNIT-I

Introduction: Attacks - Services - Mechanisms - Conventional Encryption - Classical and Modern Techniques - Encryption Algorithms - Confidentiality.

UNIT-II

Public Key Encryption: RSA - Elliptic Curve Cryptography - Number Theory Concepts.

UNIT-III

Message Authentication: Hash Functions - Digest Functions - Digital Signatures - Authentication Protocols.

UNIT-IV

Network Security Practice: Authentication, Applications - Electronic Mail Security - IP Security - Web Security.

UNIT-V

System Security: Intruders - Viruses - Worms - Firewalls Design Principles - Trusted Systems.

Text Book

1. William Stallings, Cryptography and Network Security: Principles & Practice, Prentice Hall, 3rd Edition, 2002.

References

1. Kahate - Cryptography and Networks Security - 1st Edition 2005, TMH, New Delhi.
2. Bruce, Schneier, Applied Cryptography, 2nd Edition, Wiley & Sons, 1996.
3. Man Young Rhee, Internet Security, Wiley, 2003.
4. Pfleeger and Pfleeger, Security in Computing, Pearson Education, 3rd Edition, 2003.

**PROJECT WORK
DISSERTATION AND *VIVA VOCE***
