

NIMS UNIVERSITY, JAIPUR



SYLLABUS

**BACHELOR OF COMPUTER
APPLICATIONS (B.C.A.)**

BACHELOR OF COMPUTER APPLICATIONS

S.NO	YEAR-1	Theory	Practical
1.	Computer Fundamental & PC Tools	100	100
2.	Data Base Management Systems	100	-
3	Business Data Processing	100	50
4	Digital Circuit & Design	100	50
5.	Data Structure & Programming with C	100	50
6	Communication for professional	100	-
	YEAR-II		
1	Object Oriented Programming with C++		T+P
2	Computer Organization and Architecture		T
3.	Structured System Analysis and Design (SSAD)		T
4	Front end Technology using Visual Basic		T+P
5.	Programming Logic and Technique		T
6.	RDBMS		T+P
	YEAR-III		
1.	HTML		T+P
2.	Computer Network		T
3.	Internet Technology		T
4.	Core Java		T+P
5	Operating Systems		T
6.	Management Information System		T
7.	Major Project Work		P

Computer Fundamentals

UNIT 1	<p>Characteristics of computer & its block diagram, generation of computer, classification of computer (super, mainframe, mini, workstation, portable), number system.</p> <p>Input device (keyboard, pointing device, data scanning, digitizer, electronic card based device, speech recognition device).</p> <p>Output device (Monitor, printer, plotter, speaker, screen image projector).</p> <p>CPU – CU & ALU, Processor speed, system clock, Motherboard, Microprocessor, Expansion slot, Memory buses.</p> <p>Storage unit – Primary & secondary storage unit, Main Memory – RAM (SRAM & DRAM) & ROM, Cache Memory.</p> <p>Secondary Memory & its type (sequential & direct access) Magnetic tapes, Magnetic Desk, Optical Disk, Disk Formatting (Boot Record, FAT, Folder directory).</p>
UNIT 2	<p>Software and Types of Software- Operating system basics, application software definition and basics. Introduction to Programming Languages, System software (Operating systems and Utilities), application software (Word processors, Spreadsheet, DBMS, Presentation Graphics, Browsers, Personal Information Managers), Introduction to Multilingual Word- processors. Data Warehousing – Need for data warehousing, data warehouse components, Construction of data warehouse (Theory Only)</p>
UNIT 3	<p>Application Software (Working knowledge at Common users Level Only)</p> <p>(a) Word Processing, Software MS Word, Entering, Editing and Formatting Text, Document Formats, (page Size and Orientation, Headers and Footers, Columns and Section, Page layout), Spelling and Grammar headers, Thesaurus, Find and Replace, Cut and Paste, Tables and Formatting tables, Mail Merge, Styles and Templates.</p> <p>(b) Spreadsheet Program - MS Excel Entering data, Labels Values, Dates, Formulas, Cell references, Formats, Functions, Templates, Charts and Maps, analyzing data in a spreadsheet.</p> <p>(c) DBMS - Microsoft Access Database, Entering data into the database Creating Database tables, editing data, Viewing Records, Sorting records, Querying a database, generating reports.</p>
UNIT 4	<p>Communications and Connectivity-Data Communication systems, Data transmission (serial, Parallel, bandwidth, Protocols), E-mail, FAX, Voice and Video messaging, Video conferencing, Online services, userconnection (type) Networking of Computers (Node, Client, Server. LAN, WAN), Using the network, The Internet and the Web. Telecommunication Concepts, Data Transmission and OSI reference model, LAN, MAN, WAN, WWW, Topologies, Protocol stack, Internet, Intranet, Extranet.</p>
UNIT -5	<p>The Internet and Online Resources (Working knowledge at Common users Level Only)</p> <p>How the Internet works, Introduction to TCP/IP, IP and DNS address, Features of the Internet 9E-mail, News, Telnet, FTP, Chart, Channel, WWW, Online services, Bulletin Board Services) Connecting to a PC to the Internet (Setting Dial up and Internet connection Wizard) Overview of Internet browsers IE and Firefox, features, there in use off search engines surfing creating and Use of e-mail, Awareness about e-commerce and its advantages.</p>

RECOMMENDED BOOKS

1. Computers : Technology, Applications and Social Implications
2. A First Course in Data Processing, J. Daniel Couger & Fred R McFadden, Wiley

3. David, Van Over, Foundations of Business System, Forth Worth, Dryden 1992
4. Estrada Susan, Connecting to Internet, OReiley, 1993
5. Computer Networking – James F Kurose & Keith W Ross, Addison Wesley, 2004
6. Data Communications and Networking – 3rd Edition, Forouzan, Tata McGraw Hill
7. The Internet Book – Douglas E Comer, PHI
8. Computer Networks-Protocols, Standards & Interfaces-Black, PHI

PC Tools

UNIT 1	<p>Documentation Using MS-Word</p> <p>Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark.</p>
UNIT 2	<p>Advance MS-Word</p> <p>Advance Features of MS-Word (Mail Merge, Macros), Tables, File Management, Printing, Styles, linking and embedding object, Template.</p>
UNIT 3	<p>Electronic Spread Sheet using MS-Excel -</p> <p>Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel (Pivot table & Pivot Chart, Linking and Consolidation), Database Management using Excel (Sorting, Filtering, Table, Validation, Goal Seek, Scenario).</p>
UNIT 4	<p>Presentation using MS-PowerPoint</p> <p>Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.</p>

RECOMMENDED BOOKS

1. Microsoft Office – Complete Reference – BPB Publication
2. Learn Microsoft Office – Russell A. Stultz – BPB Publication

Database Management System

UNIT 1	<p>Overview of DBMS</p> <p>Introduction to DBMS, Advantage of Database, Disadvantage of Database, Objective of Database, Data, Information and knowledge, Increasing Use of Data as a Corporate Resources, Database, Administrative Roles, DBMS Architecture, Different kind of DBMS Users, Importance of Data Dictionary, Contents of Data Dictionary, Types of Database Languages, Data Models.</p>
UNIT 2	<p>Traditional Database Model Over Relational Database Mode</p> <p>Hierarchical Model, Network Model, Relational Model, Data Definition and Data Manipulation, Constructs in each of the three models, A Comparison of Three Models, Relational Model, Definition of relation and properties of relation model, Concept of Keys (Super key, Candidate Keys, Primary Key, Alternate Key, Foreign Key), Relational Algebra, Different Types of Join (Simple or Eque join, Non-Eque Join, Self join, Outer Join).</p>
UNIT 3	<p>Structured Query Languages (SQL)</p> <p>Database Creation and Manipulation.</p> <p>Create Simple Queries Using (Where, Like, Group By, Having, Order By), View table Structure, Temporary Tables.</p>
UNIT 4	<p>Entity Relationship Model: Overview of Database Design, Entity, Attributes, Relationships and Relationship sets, Features of ER Model.</p> <p>Conceptual database design with ER model-Entity versus attribute, entity versus relationship.</p>
UNIT 5	<p>Relatonal Model: Introduction to relational Model, Foreign Key Constraints, enforcing integrity constraints, introduction to views, destroying/altering tables & views</p>

Books Suggested

1. The complete reference-By Coach and loney
2. A Beginners guide- By Abbey and corney
3. Database System-Elmasri and Navathe

Business Data Processing

UNIT 1 (05Hrs)	Introduction to Data Processing Introduction to Data and Information, Logical and Physical Concept of Data, File organization, Different Systems of Data Processing, Business Data Processing (Identification Data, Classification of Business Data File, Data Security, Data Integrity and Type of Checking, Basic Task in Business Data Processing, File Generation, File Backup).
UNIT 2 (05 Hrs)	Business Accounting Accounting, Accounting Conventions (Single and Double Entry), Basic Accounting Equation, Types of Accounts, Personal Accounts, Impersonal Accounts, Real, Nominal, Terms in Accounting, Assets, Liabilities, Capital, Goods, Debtor, Creditor, Gross Profit, Net Profit, Revenue, Expense, Types of Vouchers, Journal Entries, Final Accounts, Trading / Manufacturing Account, Profit / Loss Account, Balance Sheet,
UNIT 3 (10 Hrs)	Introduction to ACCESS Introduction to Database, DBMS, RDBMS, Feature of Access, Designing Database, Relationship (One to One, One to Many, Many to One, Many to Many), Create Table (Design View, Wizard, Datasheet View), Query (Update Query, Delete Query, Selection Query, Cross Table Query, Make Table Query).
UNIT 4 (20 Hrs)	Forms, Reports and Labels Create (Manually, Form Wizard, Auto Form), Sorting, Filtering, Report Creation (Design View and Wizards), Report using Single Tables/ Multiple Tables/Queries, Labels.

RECOMMENDED BOOKS

1. O' Level Business System – V. Jain –BPB
2. An introduction to Accounting – T. S. Grewal – Sultan Chand & Co
3. Access 2000 Developer hand book – Gilbert – BPB

205: Digital Circuits and Design

UNIT 1	Introduction to number systems and their conversion. Arithmetic with bases other than ten. Negative numbers. Binary coded decimal number and ASCII representation.
UNIT 2	Octal, Hexadecimal number, r's and (r-1)'s complement
UNIT 3	Introduction to Boolean Algebra fundamental theorem of Boolean Algebra and simplification of Boolean expression, standard form of Boolean function, minterm & maxterm, simplification of functions on k-map
UNIT 4	Flip flop:-R-S, J-K, D, T flip flop and their characteristics and their operation
UNIT 5	Introduction to switching devices, positive & negative logic of OR, AND, NOR, NAND, Exclusive OR and Exclusive NOR gates.

RECOMMENDED BOOKS

1. Modern Digital Design – Sandiege– McGraw Hill
2. Switching theory & Logic Design – hill & Peterson - McGraw Hill
3. Digital Design– Morris Mano – Pearson

Programming with 'C'

UNIT 1	'C' Language Fundamentals Introduction to 'C' Language, Pre Processor, Program Element (Token, Keyword, Data Type, Variable, Delimiter, Identifiers, Constant, Library Function, Conversion Specifies, Operators).
UNIT 2	Program Development in 'C' Program control statement (Sequential Statement, Decision Statement and Looping statement), Array (One Dimensional, Two Dimensional, Multi Dimensional), Array of Character, Sting Manipulation using Library Function, Function (Call by Value, Call by Reference, Recursion), Different Storage Classes.
UNIT 3	User Defined Types and Pointer User Defined Data Types (Structure, Union and Enumeration), Pointers in 'C', Pointer Arithmetic, Pointer Comparison, Pointer to Array, Pointer to Structure, Pointer to Function, Pointer to Pointer, Dynamic Memory Allocation, TypeDef
UNIT 4	Files, Macros and Graphics Macros, Introduction to File, File I/O, Introduction to Graphics

RECOMMENDED BOOKS

1. E. Balaguruswamy "Programming in C", Tata McGraw Hill
2. H. Schildt, "C The Complete Reference", Tata McGraw Hill
3. Y. Kanetkar, "Let us C", BPB Publications

204: Data Structure using C

UNIT 1	Development of Algorithms: Notations & Analysis, storage structures for arrays, Arrays Pointer, Sparse matrices- Structures & Arrays of structures.
UNIT 2	Linked list (Single linked list, doubly linked list, circular linked list), Application of linked list (Polynomial manipulation), Stack & Queue (Implementation of stack as an array and linked list, Application of Stack, prefix, infix, postfix expressions, expression evaluation.
UNIT 3	Binary Trees, Binary search trees, General trees, Tree Traversing, Operations on Binary trees, Expressions manipulations.
UNIT 4	Graphs, Graphs Representation, Path matrix-BFS, DFS- Bi-connected graphs, Shortest path problems.
UNIT 5	Sorting (Selection, Bubble, Insertion, Merge, Quick), Linear Searching, Binary Searching.

Books Suggested

1. Data Structure using C – Rajni Jindal – Umesh Publication
2. Data Structure - Tanenbaum
3. Data Structure using C – B. Baluja Dhanpatrai Publication

Communication for Professionals

UNIT 1	Role of Communication: defining communication- classification of communication – purpose of communication – process of communication- elements of communications – major difficulties in communication – common problems in two way communication- barriers to communication conditions for successful communication – characteristics of successful communication – universal elements in communication.
UNIT 2	Importance of communication in management: important functions of managing – managing and communication – need for communication in management – corporate communication – the manager – the human needs – communication training for managers – communication structure in an organization – communication and the line and staff management – formal communication – informal.
UNIT 3	Written Business Communication: The art of Writing – Importance of skills in written communication – purpose of writing- the audience – clarity in writing – principles of effective writing.
UNIT 4	Business Letters and Memos: introduction- writing routine pleasant letters – writing a persuasive letter- writing memos – case study – A Reply sent to erring customer.
UNIT 5	Report Writing: Report- Difference between reports and other forms of writing- purpose of a report- kinds of report- objectives of report- writing report – basic and subsidiary parts of a report- writing elements of a long formal report- abstract and executive summary – discussions of findings and analysis – subject wise development – concept development – the process of investigation – research report –Difference of summer project report from business / technical reports / guidelines for writing summer project report – summer project proposal – synopsis – summer project presentation. Summer Project Report based on hypothetical topics in Human Resource & Marketing
UNIT 6	Oral Communication: skills and effectiveness Application of conversation control – negotiation skills – nature of negotiation – need to negotiate- stages of negotiation process – negotiation strategies- presentation skills – elements of presentation – designing presentation – Listening in communication.
UNIT 7	Non Verbal Communication: meaning- characteristics – classification – advantages – guidelines for developing non verbal communication- Case Study- Wave & three other case studies related to non verbal communication
UNIT 8	CVs. Group Discussion and Personal interviews: preparing for job- summary, drafting an application letter – interview- job interview- communication skills – focus of job interviews – analysis and interpretation of respondents Case study employment interviews for cabin crews & Five other case studies on interviews
UNIT 9	Business Etiquette: meaning- business dining- foreign language – business manners of different countries – business to business etiquette – managing customer care - Case Study- Five Case Studies on Business Etiquette
UNIT 10	Business Gossips in communication: types of business gossips – grape vine communication – managing business gossips – prospects of business gossips.

RECOMMENDED BOOKS

1. Business Communication Concepts Cases and Application – PD Chaturvedi & Mukesh Chaturvedi – Peason Education
2. Business Communication – Urmila Rai & S M Rai – Himalaya Publishing House
3. Lillian H Chaney, Jeanette S Martin – Intercultural Business Communication –PHI
4. Leo Jones, Richard Alexander, New International Business English, Cambridge University Press, Singapore, 2006
5. Victor – International Business Communication – PHI

REFERENCE BOOKS

1. John Mattock – Cross Cultural Communication – Essential Guide to International Business – Kogan Page

2. Herbert W Hilderbrandt – Effective Business Communication, MacGraw Hill, 7/e, 1997
3. Axel Satzger, Gina Poncini – International Perspective on Business Communication: From Past Approaches to Future Trends, Peter Lang Publications Inc., 2003

YEAR – II

Object Oriented Programming with C++

UNIT 1	Introduction to OOPs and C++ Element Introduction to OOPs, Features & Advantages of OOPs, Different element of C++ (Tokens, Keywords, Identifiers, Variable, Constant, Operators, Expression, String).
UNIT 2	Program Control Statements Sequential Constructs, Decision Making Construct, Iteration / Loop Construct, Arrays, Functions (User defined Function, Inline Function, Function Overloading), User Defined Data Types (Structure, Union and Enumeration).
UNIT 3	Class, Object, Constructor & Destructor Class, Modifiers (Private, Public & Protected), Data Member, Member Function, Static Data Member, Static Member Function, Friend Function, Object, Constructor (Default Constructor, Parameterized Constructor and Copy Constructor), Destructor.
UNIT 4	Pointer, Polymorphism & Inheritance Pointer (Pointer to Object, this Pointer, Pointer to Derive Class), Introduction to Polymorphism (Runtime Polymorphism, Compiletime Polymorphism), Operator Overloading, Virtual Function, Inheritance (Single Inheritance, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance), Virtual Base Class, Abstract Class.
UNIT 5	File Handling, Exception Handling Files I/O, Exception Handling (Exception Handling Mechanism, Throwing Mechanism, Catching Mechanism, Re-throwing an Exception).

RECOMMENDED BOOKS

1. E. Balaguruswami – Object Oriented programming with C++
2. Kris James – Success with C++
3. David Parsons – Object Oriented programming with C++
4. D. Ravichandran – Programming in C++
5. Dewhurst and Stark – Programming in C++ Venugopal, Ravishankar

Computer Organization and Architecture

UNIT 1	<p>Combinational and Sequential Circuits</p> <p>Introduction to Boolean Algebra, Different type of Gates, Law of Boolean Algebra, Algebraical expressions, Karnaugh –Maps, Flip-Flops, Sequential Circuits</p>
UNIT 2	<p>Introduction to Hardware</p> <p>Cycle time of CPU, Register, Accumulator, Arithmetic Logical Unit, System Bus- Introduction, Memory (Hierarchy of memory, features of memory, semiconductor memories)</p>
UNIT 3	<p>Instruction Format and Addressing Methods</p> <p>Processor Organization, Register Organization Different Instruction Format, Instruction length, Introduction of Addressing Mode, Different Addressing Modes, Processor Organisation, Register Organisation.</p>
UNIT 4	<p>Organization of data and I/O System Interrupt</p> <p>Organization of Data in Memory, Stack, Input Output Organization, Different I/O techniques, Input /Output Processor, RISC, CISC.</p>
UNIT 5	<p>Memory Organization and Peripherals</p> <p>Memory, Memory Hierarchy, Various Memory Devices, Cache Memory, Virtual Memory, Secondary Memory, Different Input / Output Devices and their function, Associative Memory, DMA.</p>

RECOMMENDED BOOKS

1. Computer Organization – V. Carl Hamacher & Zvonko G. Vranic – McGraw Hill
2. Computer Architecture & Logic Design – Thomas C. Barty - McGraw Hill
3. Computer Organization – J. P. Heys
4. Digital Computer – Morris Mano – Pearson

Structured System Analysis and Design (SSAD)

UNIT 1	<p>Overview of System Analysis and Design</p> <p>Introduction to System, Difference between Manual System and Automated System, Types of Systems, System Analyst, System Development Life Cycle and its Phases, Elements of Structured Analysis and Characteristics.</p>
UNIT 2	<p>Designing of a System</p> <p>Data Flow Diagrams (DFD), Data Dictionary, Pseudocode, The Process of System Design, Difference between Logical Design and Physical Design, Top-Down Design and Functional Decomposition, Forms-Driven Methodology.</p>
UNIT 3	<p>File Organization and Data Base Design</p> <p>The Major Development Activities in Structured Design, Elements of Design, Introduction to File Organization, Data Base Design, Objectives of Data Base Design, The Role of DBA.</p>
UNIT 4	<p>System Testing and Implementation</p> <p>System Testing, Need for System Testing, Testing Strategies, Quality Assurance, Implementation, Evaluation.</p>

RECOMMENDED BOOKS

1. Award Elias M. – Systems Analysis & Design.
2. Sen James A. – Analysis & Design of Information Systems
3. Lee-Introductory Systems Analysis and Design
4. Wetherbe James C. Systems Analysis & Design

Front End Technology using Visual Basic

UNIT 1	Introduction and Programming Fundamentals of VB Introduction to Visual Basic, IDE and its Components, VB Data type, Variable Scope, Module, Conditional Statement, Looping, Procedure, Function, Event, Forms Controls (Property, Event, Method) Control Array, Dialogbox (MsgBox(), InputBox()), MDI form, Menu (Standard Module, MDI).
UNIT 2	Basic Active X and Common Dialog Boxes, File Input Output Introduction to Activex control, Common Dialog Control, File Operation.
UNIT 3	Database Handling Introduction to Database, Bound Control and UnBound Control, Recordset, Types of Connectivity (DAO, RDO, ADO), Introduction to Data Report, Design Data Report, Group Report.
UNIT 4	Graphical Application in VB Draw (Line, Circle, Box, Ellipse), Animations, Graphical Command Button.

RECOMMENDED BOOKS

1. Mastering Visual Basic – Evangelos petroustos - BPB Publication
2. Visual Basic – Garry Coprnel –Tata McGraw-Hill.

Programming Logic and Technique

UNIT 1	Introduction to Programming, Input-Output-Process Sequence, Problem Definition, Program and Program Life Cycle, Data Handling, Program Elements (Variable, Constant, Data Types), Storing Multiple Data Using Array, Implementing Expression/Operator (Arithmetic, Logical, Relational), Flow Chart, System Flow Chart, Program Flow Chart, Concept of Algorithm, Flowchart Symbols, Operators, Program Structure.
UNIT 2	Straight Line Program, Selection or Conditional Construct, Nested Condition, Iteration, Nested Loop, Subprogram (Function, Procedure, Recursion)
UNIT 3	Array Operation (Inserting, Searching, Sorting, Merging), Structure Programming, Different Form of Structure, Top-Down, Modular Programming, File (Serial File, Sequential File, Index File, Random File).
UNIT 4	Introduction Pseudo codes, Operations & Basic Logic (Sequence, Selection, Iteration) Constructs, Advanced Pseudo coding Concepts, Query (Sequential Query, Random Query, File Query) Types of Error, Program Testing, Dry Run, Program Development Process, Design and Implementation.

RECOMMENDED BOOKS

1. Introduction to programming – Hampel Tronic – AIPD
2. Business System- M. Jain & S. Jain - BPB

RDBMS

UNIT 1	Introduction to Database Database, Database Management System, Entity, Attribute, Relationship, Database Model, RDBMS, Keys (Primary, Foreign, Candidate key).
UNIT 2	Interactive SQL Commands Data Definition Language (Create, Alter, Truncate, Drop), Data Manipulation Language (Select, Update, Insert, Delete), Data Control Language, SQL Function
UNIT 3	Database Object with Securities and Privileges Indexes, Views Clusters, Synonym, Sequence, Granting and Revoking Permission.
UNIT 4	PL/SQL Introduction to PL/SQL, PL/SQL Architecture, PL/SQL Block Structure, PL/SQL Datatype, Sequential Control, Conditional Control and Iteration Control.
UNIT 5	Cursor Management & Exception Handling in PL/SQL & Packages Cursor, Procedure, Function, Exception Handling, Packages, Trigger

Books Suggested

1. SQL, PL\SQL – Ivan Bayross - BPB
2. Oracle PL\SQL programming – Urman - Tech Media
3. Mastering Oracle – Sybex - Oracle Press

YEAR – III**HTML**

UNIT 1	HTML: Introduction to the internet:-Computers in Business; Networking; Internet; Electronic mail; Resources Sharing; Gopher; World Wide Web; Usenet; Telnet; Bulletin Board Service; Wide Area Information Service
UNIT 2	Internet Technologies: Modem; Internet Addressing; Physical connections: Telephone lines Introduction to HTML: Designing a home page, History of HTML, HTML generation, HTML, HTML Document. Anchor Tag; Hyper Links
UNIT 3	Head & Body Section: Header Section, Title Section; Colourful Web page, Comment line; Designing the Body section-Heading printing; Aligning the headings; Horizontal rule, Paragraph, Tab Setting; Images & pictures
UNIT 4	Ordered & Unordered List & Table Handling-Tables; Table creation in HTML; Width of table & cells; Cells Spanning Multiple Rows / Columns; Coloring Cells; Column Specification
UNIT 5	DHTML & Style Sheet -Defining Style; elements of style; linking a style sheet to an HTML Document; Inline Style Sheet; External & Internal Style Sheet; Multiple Style Sheet, Frames: Introduction to Frames, <Frameset> Tag, <Frame> Tag, and Targeting named frames.
UNIT 6	Cascading Style Sheets: Understanding Style Sheets, Applying Style Sheets to HTML document Developing a Style Sheet: Setting Font attributes, Text Attributes, Border Attributes, Setting Background properties and List Attributes.

RECOMMENDED BOOKS

1. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Pen CGI, BPB Publications, 2000
2. T. A. Powell, Complete Reference HTML (Third Edition), TMH, 2002

REFERENCE BOOKS

1. Edward Farrar, "HTML Example Book", BPB
2. Jose A. Ramalho, "Learn Advanced HTML with DHTML", BPB Publica

Computer Networks

UNIT 1	<p>Physical Layer:</p> <p>Introduction to Computer Communication and Network: Network Topologies, Types of Network, OSI Model, Protocol Stack, Network Protocols. Analog Signals & Digital Signals. Data Transmission: Sampling, Transmission Mode. Analog Transmission: Modulation (Analog & Digital Signals). Multiplexing: FDM, WDM & TDM. Transmission Media: Guided Media, Unguided Media (Wireless). Circuit Switching.</p>
UNIT 2	<p>Data Link Layer:</p> <p>Error detection and correction: - Type of Errors, Detection, Error Correction, Framing.</p> <p>Data Link Control and Protocols: - Flow and Error control, CRC, REC, FEC, Hamming Code, Stop-and Wait ARQ, Go-Back, N ARQ, Selective Repeat ARQ, HDLC, ALOHA, CSMA, CSMA/CD.</p>
UNIT 3	<p>Network Layer:</p> <p>Host to Host Delivery: IP Addressing and Routing, Gateway, N/W Layer Protocols: ARP, IPV4, ICMP, IPV6, Transport Layer: Process-to-Process Delivery: UDP, TCP Congestion Control & Quality of Service.</p>
UNIT 4	<p>Application Layer:</p> <p>Client Server Model, Domain Name System (DNS), E-mail (SMTP), File Transfer (FTP) HTTP, WWW.</p>

RECOMMENDED BOOKS

1. Data Communication & Networking – Behrouz A. Forouzan, TMH
2. Computer Network – A. S Tanenbaum, Pearson Education
3. Computer Newtworks- kundu – PHI
4. Computer Network – Rajesh – Vikash

Internet Technology

UNIT 1	Internet Connection Concept-Server, Client, Domain Name System, Telephone, Cable and Satellite connection-dialup, ISDN, ADSL and Leased line based Connection, Cables and DSS accounts, ISP features
UNIT 2	Intranet – What is intranet? Its components, server and network OS, Network cards, cabling and Hubs, Steps for creating an Intranet. Maintenance and connecting to Internet
UNIT 3	E-MAIL TECHNOLOGY: Features and concepts-Message headers, Address book, Attachment, filtering and forwarding mails.
UNIT 4	WEB TECHNOLOGY: Elements of the web –Clients and Servers, Languages and protocols Web Page and Web Sites, Special kinds of web sites. Web resources-search engines, Message boards, clubs, News groups and chat. Web page creating concepts-Planning, Navigation, Themes and Publishing, Analyzing web traffic-

RECOMMENDED BOOKS:

1. M. L. Yount-Internet: The Complete Reference, Tata McGraw-Hill Company.
2. Harley Hanh-The internet Complete Reference, Tata McGraw-Hill Company.
3. Daniel Minoli-Internet & Intranet Engineering, Tata McGraw-Hill Company.

Core Java

UNIT 1	Introduction to JAVA Introduction to Java, Java Virtual Machine, Object Oriented Principle, Object and Classes, Java Keywords, Variable, Data types and Literals in Java, String, Operators and Casting, Control of Flow, (Selection Statements, Iteration Statements), Command Line Argument.
UNIT 2	Classes and Inheritances Introduction to Class and Object, Method, Overloading Method, Constructor, Constructor Overloading, this Keyword, Introduction to Inheritance, Using Super, Multilevel Hierarchy, Abstract class, Using Final.
UNIT 3	Package and Interface Package (Defining Package, Finding Package), Introduction to Interface, Defining, and Implementing of Interface, Predefined Package.
UNIT 4	Exception Handling and Threads Exception Handling, Type of Exception, Try, Catch, and Finally. Multiple Catch blocks, Nested Try Statements, throw, throws, Thread Model, Multithreading.

RECOMMENDED BOOKS

1. Complete Reference (Java 2) – Herbert Schildt - Tata McGraw Hill
2. Java in a nut shell – Flanagan – Orielly Publication

Operating System

UNIT 1	Evolution of Operating System. Basic concepts: User, job, Resources, Batch processing, Multiprogramming,
UNIT 2	Memory management: Address Protection, Segmentation, Virtual Memory, Paging, Page replacement algorithms.
UNIT 3	Support for concurrent process : Mutual Exclusion, Shared Data, Critical Sections, Busy form of waiting, lock and unlock primitives, synchronization, blocking and wake up. Process Scheduling: Process states, virtual processors, interrupt mechanism, scheduling algorithms, implementation of concurrency primitive
UNIT 4	System Deadlock : Prevention, Detection and Avoidance
UNIT 5	Time sharing, Process, Process Control Block.
UNIT 6	Shell Programming, UNIX-C interface, System calls, Device Driver, Interrupt Handler. UNIX and Linux as example systems.

RECOMMENDED BOOKS:

1. Peterson and Silberschatz, Operating System Concepts, Addison Wesley.
2. P. B. Hansen, Operating System Principles, PHI.
3. K. Christian, The UNIX Operating System, John Wiley.
4. A. N. Haberman, Introduction to Operating System Design, Galgotia.
5. Manuals of DOS, UNIX and Netware

Management Information System

UNIT 1	Introduction to MIS: Concept of MIS, role of MIS, objectives of MIS, Advantages, and Disadvantages of computer based MIS
UNIT 2	Information : Classification of information, levels of information, methods of data and information collection, value of information
UNIT 3	System Analysis and Design Introduction, system analysis for existing system, system analysis for new requirements, cost benefit analysis
UNIT 4	Development of MIS : Determining the Information requirements for development of MIS, implementation of MIS, factors responsible for development of MIS, Evaluation of MIS
UNIT -5	Information System for Decision Making Decision making and MIS, Decision making concepts, organizational decision making, MIS and decision making concepts. MIS as technique for programme decisions, DSSMIS and role of DSS
UNIT 6	Network : Introduction, topology, LAN, WAN, Data communication. MIS in operations, MIS for Finance, Production, Marketing, HRM

Text Book:

1. Javadekar, W. S.; *Management Information System*, Tata MacGraw Hill Publication, 2003.

Reference Books:

1. Information Systems for Managers: Arora, Ashok and Akshaya Bhatia, Excel Books, New Delhi.
2. Management Information Systems, Basandra, Suresh K. Wheeler Publishing, New Delhi.