

**B.SC (IT)****Semester I**

<b>Subject Code</b>	<b>Name of Subject</b>	<b>Teaching</b>			<b>Total Credit</b>
		<b>L</b>	<b>T</b>	<b>P</b>	
01BSI-101	Discrete Mathematics	4	2	0	6
01BSI-102	Principles of Management	4	2	0	6
01BSI-03	Office Automation PC Software	4	2	0	6
01BSI-104	Computer Fundamental & C- programming	4	2	0	6
Practical					
01BSI-201	PC Software Lab	0	0	3	2
01BSI-202	C Programming Lab	0	0	3	2
01BSI-301	Discipline And Co-Curricular Activities	0	0	4	1
<b>Total</b>		<b>16</b>	<b>8</b>	<b>10</b>	<b>29</b>

**Semester II**

Subject Code	Name of Subject	Teaching			Total Credit
		L	T	P	
02BSI-101	Data Structure and Algorithm	4	2	0	6
02BSI-102	Database Management System	4	2	0	6
02BSI-103	Mathematics	4	2	0	6
02BSI-104	Computer Organization	4	2	0	6
Practical					
02BSI-201	Database Management System Lab	0	0	3	2
02BSI-202	Data Structure & Algorithm Lab	0	0	3	2
02BSI-301	Discipline And Co-Curricular Activities	0	0	4	1
<b>Total</b>		<b>16</b>	<b>8</b>	<b>10</b>	<b>29</b>

**Semester III**

<b>Subject Code</b>	<b>Name of Subject</b>	<b>Teaching</b>			<b>Total Credit</b>
		<b>L</b>	<b>T</b>	<b>P</b>	
03BSI-101	Computer Oriented Statistical and Optimization Method	4	2	0	6
03BSI-102	System Analysis & Design	4	2	0	6
03BSI-103	Object Oriented Programming Using C++	4	2	0	6
03BSI-104	Computer Architecture	4	2	0	6
Practical					
03BSI-201	SAD Lab	0	0	3	2
03BSI-202	C++ Programming Lab	0	0	3	2
03BSI-301	Discipline And Co-Curricular Activities	0	0	4	1
<b>Total</b>		<b>16</b>	<b>8</b>	<b>10</b>	<b>29</b>

**Semester IV**

<b>Subject Code</b>	<b>Name of Subject</b>	<b>Teaching</b>			<b>Total Credit</b>
		<b>L</b>	<b>T</b>	<b>P</b>	
04BSI-101	Java Programming	4	2	0	6
04BSI-102	Computer Graphics	4	2	0	6
04BSI-103	Data Communications & Comp. Networks	4	2	0	6
04BSI-104	E-Commerce	4	2	0	6
Practical					
04BSI-201	Java Programming Lab	0	0	3	2
04BSI-202	Computer Graphics Lab	0	0	3	2
04BSI-301	Discipline And Co-Curricular Activities	0	0	4	1
<b>Total</b>		<b>16</b>	<b>8</b>	<b>10</b>	<b>29</b>

**Semester V**

<b>Subject Code</b>	<b>Name of Subject</b>	<b>Teaching</b>			<b>Total Credit</b>
		<b>L</b>	<b>T</b>	<b>P</b>	
05BSI-101	Programming in Visual Basic	4	2	0	6
05BSI-102	Technical Documentation	4	2	0	6
05BSI-103	Operating System	4	2	0	6
05BSI-104	Software Engineering	4	2	0	6
Practical					
05BSI-201	Visual Basic Lab	0	0	3	2
05BSI-202	Operating System Lab	0	0	3	2
05BSI-301	Discipline And Co-Curricular Activities	0	0	4	1
<b>Total</b>		<b>16</b>	<b>8</b>	<b>10</b>	<b>29</b>

**Semester VI**

<b>Subject Code</b>	<b>Name of Subject</b>	<b>Teaching</b>			<b>Total Credit</b>
		<b>L</b>	<b>T</b>	<b>P</b>	
06BSI-101	Multi Media Basic	4	2	0	6
06BSI-102	Relational Database Management System	4	2	0	6
06BSI-103	Project	8	4	0	12
Practical					
06BSI-201	Multi Media Lab	0	0	3	2
06BSI-202	Relational Database Management System Lab	0	0	3	2
06BSI-301	Discipline And Co-Curricular Activities	0	0	4	1
<b>Total</b>		<b>16</b>	<b>8</b>	<b>10</b>	<b>29</b>

## Semester -I

### 01BSI-101:

## DISCRETE MATHEMATICS

**Course/Paper: 01BSI-101**  
**BSI Semester-I**

Mathematical Logic Statements, Negation operation, Logic connectives and compound statements, conjunction, disjunction, Truth table, Duality, Conditional and in-conditional statements, valid arguments, Laws of detachments and syllogism, tautologies and fallacies.

**Boolean Algebra:** Development of Boolean Algebra, Truth functions, AND, OR, NOT operators Laws of Boolean Algebra, Reducing Boolean expressions, Boolean expressions and logic diagrams, Universal laws, Building blocks, Negative logic Minterms, Truth table and maps, Reduction of maps, Hybrid functions.

**Graph Theory** Definition of a graph, finite and infinite graphs, Incidence and degree, null graph Sub graphs, walks, Paths and circuits in a graph, connected graphs, Trees, Properties of Trees, cut sets and cut vertices, Planner graphs, Incidence Matrix, Directed graphs, Fundamental Circuits in Diagraphs, Adjacency matrices of a diagraph.

Suggested readings –

- |    |                                  |                        |                            |
|----|----------------------------------|------------------------|----------------------------|
| 1. | Discrete Mathematical Structures | Kolman, Busby, Ross    | PHI                        |
| 2. | Discrete Mathematical Structures | Chourasiya, Srivastava | Genius Publication, Jaipur |
| 3. | Discrete Mathematics             | Olympia Nicodemi       | CBS, Delhi                 |
| 4. | Discrete Mathematics             | Akerkar                | Pearson/PHI                |

### 01BSI-102:

## PRINCIPLES OF MANAGEMENT

**Course/Paper: 01BSI-102**  
**BSI Semester-I**

Conceptual Framework of Management - Evolution and Foundation of Management Theories - Study of Management Processes, Planning, Organizing, Directing, Staffing, Communicating, Controlling, Coordinating - Types of Organizational Structures & Designs. - Relevance of Computer Applications in Different Functional Areas of Management Viz: Financial Management, Materials Managements, Production Management, Human Resources Management and Marketing Management.

Suggested readings –

- |    |                           |              |              |
|----|---------------------------|--------------|--------------|
| 1. | Principles of Management  | R.L. Nolakha | RBD,Jaipur   |
| 2. | Management                | G. S. Sudha  | RBSA, Jaipur |
| 3. | Principles of Mabnagement | Cotler       | Pearson/PHI  |

## 01BSI-103

### OFFICE AUTOMATION PC SOFTWARE

**Course/Paper: 01BSI-103**  
**BSI Semester-I**

**MS Windows:** Introduction to MS Windows, concept of GUI, windows explorer, Control Panel, accessories, running applications under MS windows..

**MS Word:** Introduction to MS Word, Standard Tool Bar, Word Wrap, Text formatting, Formatting Paragraphs, Applying Effects to a Text, Applying animation to Text, Mail merge.

**MS Excel:** Introduction to MS Excel, Working with Toolbars, Formatting, Formulas, Data Management Graphs & chart, Macros and other additional functions.

**MS PowerPoint:** Introduction, PowerPoint Slide creation, Slide Show, adding Graphics, Formatting Customizing, and Printing.

**MS Access:** Introduction, Understanding Databases, creating a Database and Tables Automatically, Creating and Printing Reports, Queries, Creating a database and Application, Linking, Importing and Exporting Data, Form, Creating Reports, Creating Charts, and Pivot Tables.

Suggested readings –

- |    |  |                             |     |           |
|----|--|-----------------------------|-----|-----------|
| 1. | Training guide MS Office 2000                    | Reid, Schwartz, Rain, Brady | BPB |           |
| 2. | PC Software for Windows 98 Taxali<br>Made simple |                             | BPB |           |
| 3. | Exploring MS Office XP                           | Breeden II, Cheek           | BPB |           |
| 4. | SAMS MS Excel 2000<br>Programming in 24 days     | Poodlin                     |     | Techmedia |
| 5. | Office 2000                                      | Busby, Stultz               |     | BPB       |

## 01BSI-104

### COMPUTER FUNDAMENTALS AND 'C' PROGRAMMING

**Course/Paper: 01BSI-104**  
**BSI Semester-I**

**Computer Fundamentals:** Number system: decimal, octal. Binary and hexadecimal, Representation of integers, fixed and floating points, character representation: ASCII, EBCDIC, Functional units of computer, I/O devices, primary and secondary memories.

**Programming Fundamentals:** Algorithm development, Techniques of problem solving, Flowcharting, stepwise refinement, Algorithms for searching, Sorting (exchange and insertion), Merging of order lists.

**Programming in C:** Representation of integers, Character, real. Data types: constants and variables; Arithmetic Expression, Assignment statement, Logical expression, Sequencing, Alteration and iteration; Arrays, String processing; sub programmers, Recursion, files and Pointers structured programming concepts; Top down design, Development of efficient programs, Program Correctness; Debugging and testing of Programs.

Suggested readings –

- |    |                           |              |     |                         |
|----|---------------------------|--------------|-----|-------------------------|
| 1. | Fundamentals of Computers | Sinha, Sinha | BPB |                         |
| 2. | Computer Fundamentals     | B. Ram       |     | New Age Int. Pub. Delhi |
| 3. | Let us C                  | Y. Kanitkar  | BPB |                         |
| 4. | Programming with C        | B. Gottfried |     | Schaum's Outline, TMH   |
| 5. | Computer Programming in C | Rajaraman    | PHI |                         |



01BSI-201

## PC Software Lab

Course/Paper: 01BSI-201  
BSI Semester-I

01BSI-202

## 'C' PROGRAMMING LAB

Course/Paper: 01BSI-202  
BSI Semester-I

Semester -II

02BSI-101

## DATA STRUCTURE & ALGORITHMS

Course/Paper: 02BSI-101  
BSI Semester-II

### SECTION-A

Data types, I/O functions, Logical Operators, Control structures of C, conditional Statements, Switch Statement, Arrays, Pointers, Functions, Recursion, Structures & Unions, Operations on bits, File Handling & C Preprocessor.

### SECTION-B

#### Data Structure:

**Introduction to Algorithm Design and Data Structure** : Design & analysis of algorithm, Top down and Bottom-up approaches to algorithm design, Analysis of algorithm, Frequency count, Complexity measures in terms of time and space.

**Arrays; Stacks and Queues** : Representation of array (single & multi dimensional arrays), Address calculation using column & row major ordering, representation of stacks & Queues using arrays and their operations, circular queues, Applications of arrays, stacks & queues, conversions from Infix to postfix & prefix and evolution of prefix expressions using stack.

**Linked list**: Singly linked list (Operations on list), Linked stacks and queues, polynomial representation and manipulation using linked list. Application: Reading and writing polynomials, polynomial addition. Circular linked list and doubly linked list, generalized list, sparse matrix representation using generalized list structure.

**Trees** : Logical level of binary search tree, BST transversal methods (Preorder, Postorder and Inorder), Recursive and non-recursive algorithms for traverse method, Insertion into and deletion from a BST and their implementation, preorder and Postorder, traversal, Insertion in Threaded tree, B-tree (Insertion and Deletion algorithms).

**Searching and Sorting**: Sequential and binary searches, Indexed search, Hashing schemes, Sorting methods (Insertion, Selection, Bubble, Quick, Merge and Heap Sorts).

Suggested readings –

- |    |                                      |                           |                       |
|----|--------------------------------------|---------------------------|-----------------------|
| 1. | Data Structures                      | Lipschutz                 | Schaum's Outline, TMH |
| 2. | Data Structure & program design      | Kruse                     | Pearson/PHI           |
| 3. | Data Structures & Algorithms         | Trivedi, Gupta            | Ashirwad, Jaipur      |
| 4. | Data Structures & Algorithms using C | Khanna, Tulli, Chaturvedi | Genius, Jaipur        |
| 5. | Programming & Data Structures        | Kamthane                  | PHI                   |

02BSI-102

## DATABASE MANAGEMENT SYSTEM

Course/Paper: 02BSI-102  
BSI Semester-II

**Overview of Database Management System:** Elements of Database System, DBMS and its architecture, Advantage of DBMS (including Data independence), Types of database users, Role of Database administrator

**Data Models:** Brief overview of Hierarchical and Network Model, Detailed study of Relational Model (Relations, properties of Relational Model, Key and Integrity rules), Comparison of Hierarchical, Network and Relational Model, CODD's rules for Relational Model, E-R diagram

**Normalization:** Normalization concepts and update anomalies, Functional dependencies, Multivalued and join dependencies, Normal Forms: (1NF, 2NF, 3NF, BCNF, 4NF, and 5NF)

**SQL:** SQL Constructs, SQL Join: Multiple table Queries, Build-in functions, Views and their use, Overviews of ORACLE : (Data definition , and manipulation)

**Database Security, Integrity and Control:** Security and Integrity threats, Defense mechanism, Integrity, Auditing and Control, Recent trends in DBMS-Distributed and Deductive Database

Suggested readings –

- |    |  |                  |         |
|----|--|------------------|---------|
| 1. | Database System Concepts                           | Korth, Sudarshan | TMH     |
| 2. | Database Concepts                                  | Elmasri, Nawathe | Pearson |
| 3. | Database Management Systems                        | Raguramakrishnan |         |
| 4. | SQL, PL/SQL,<br>The Programming language<br>Oracle | I. Bayross       | BPB     |
| 5. | Introduction to<br>Database Management Systems     | Kahate           | Pearson |

02BSI-103

## MATHEMATICS

Course/Paper: 02BSI-103  
BSI Semester-II

**Sets:** Sets and subsets, finite and infinite sets. Algebra of sets: Union, Intersection, complementation, Demorgan laws. Common applications of algebra of sets. Functions: Interval and sub-intervals.

**Functions:** Definition of function and examples, polynomial, rational, exponential, logarithmic and trigonometric functions. Graph of some simple functions like polynomial (upto 3rd deg), rational trigonometric functions, modulus, function, step functions, rational functions, and composite functions.

**Sequences:** Sequences, subsequences, finite and infinite sequences, limits of sequences, simple cases. Continuous functions at a point and on an interval, graphs of continuous functions, simple cases

**Differentiation of function:** Derivative of some common function, polynomial, rational exponential; logarithmic and trigonometric functions. Integration as inverse process of differentiation, integration of simple functions, method of change of variable and substitution for integrals, definite integrals, simple problems of line integral.

**Vectors and Matrices:** Vector, vector algebra Addition, subtraction, scalar multiplication, magnitude, vector multiplication. Simple applications of vectors. Matrices: Matrix, sub matrix, types of matrices, such as symmetric, square, diagonal Matrices, singular and nonsingular matrices. Addition, subtraction, multiplication of matrices, Rank of a matrix, Matrix equation, solution by Cramer's rule and Gauss elimination method.

Suggested readings –

- |    |                                |                    |
|----|--------------------------------|--------------------|
| 1. | Engineering mathematics II     | Gokhroo            |
| 2. | Engineering mathematics Vol II | Hari Singh Parihar |

**02BSI-104**

## **COMPUTER ORGANIZATION**

**Course/Paper: 02BSI-104**  
**BSI Semester-II**

**Digital Electronics:** Logic gates and circuits: Gates (OR,AND, NOR, NAND, XOR&XNOR); Demorgan's laws; Boolean laws, Circuit designing techniques (SOP, POS, K-Maps). Combinational Building Blocks: Multiplexers; Decoders; Encoders; Adder and subtracter. Sequential Building Blocks: Flip-Flops (RS, D, JK, Master-slave & T flip-flops); Registers & Shift registers, Counters: Synchronous and Asynchronous (Designing method). Memories: ROMs, PROMs, EPROMs, RAMs, Hard Disk, Floppy Disk and CD-ROM.

**Computer Organization:** Central Processing Unit: Introduction, Register Organization; Stack Organization, Instruction format and addressing modes. Control Unit: Control memory; Horizontal and vertical formats; Address sequencer; Multiprogramming Vs Hardwired control; RISC Vs CISC. Arithmetic Algorithms: Integer multiplication using shift and add, Booth's algorithm, Integer division, Floating-point representations and arithmetic algorithms. I/O Organization: Strobe based and handshake base communication; Vector and priority interrupt; DMA based data transfer. Memory Organization: Basic cell of static and dynamic RAM; Building large memories using chips; Associative memory; Cache memory organization and Virtual memory organization.

Suggested readings –

- |    |                                 |      |         |
|----|---------------------------------|------|---------|
| 1. | Computer System Architecture    | Mano | Pearson |
| 2. | Digital logic & Computer Design | Mano | Pearson |

**02BSI-201**

## **DATABASE MANAGEMENT SYSTEM LAB**

**Course/Paper: 02BSI-201**  
**BSI Semester-II**

**02BSI-202**

## **DATA STRUCTURE AND ALGORITHM LAB**

**Course/Paper: 02BSI-202**  
**BSI Semester-II**

Semester -III

**03BSI-101**

## **COMPUTER ORIENTED STATISTICAL & OPTIMIZATION METHODS**

**Course/Paper: 03BSI-101**  
**BSI Semester-III**

**Unit 1** Collection of Data, Sampling & sampling designs, Classification and tabulation of Data, Graphical representation of Data, Measure of Central values, measure of dispersal, Skew, moments and kurtosis correlation and regression

**Unit 2** Probability & Probability and distributions (Normal, Poisson's Binomial)

**Unit 3** Linear Programming , Graphical Methods, Simplex methods ( Simple Applications) Transportation problems, Assignments problems, Game theory

Suggested readings –

1. Statistics R.S.N Pillai
2. Statistical Methods S.P Gupta

**03BSI-102**

## **SYSTEM ANALYSIS AND DESIGN**

**Course/Paper: 03BSI-102**  
**BSI Semester-III**

Introduction to structured programming, programming languages for development of data processing systems; programs development methodology logic flow charting documentation of programs, coding debugging, and walk throughs and file design and record. Introduction to fourth generation language, online transaction processing systems and case tools. System analysis and design, system development cycle tools for analysis of computer based data processing system need for a structured approach data flow diagrams expansion explosion and normalization design of input and output definition system flow charts data dictionary system file design system debugging system documentation its role and types tools for documentation and updation of documentation. Management and system analysis and design, acceptance testing for systems and user involvement. Managing data processing in an organization, data processing setup, project Management techniques for managing software projects, computer hardware and software selection control audit and security of systems.

Suggested readings –

1. System Analysis & Design Awad Galgotia, Delhi

**03BSI-103**

## **OBJECT ORIENTED PROGRAMMING USING C++**

**Course/Paper: 03BSI-103**  
**BSI Semester-III**

Evolution of OOP, OOP paradigm. Advantages of OOP, comparison between functional programming and OOP approach, characteristics of object oriented language objects, classes, inheritance, reusability, user defined data types, polymorphism , overloading. Introduction to C++ identifier and keywords, constants, C++ operators, data type conversion, variable declaration, statements, expressions, input and output conditional expressions, loop statements, breaking, control statements. Defining a function, types of functions, storage class specifiers, recursion, arrays, structures. Pointers, and structures, unions. Classes, member functions, objects, arrays of class objects. Pointers and classes, nested classes, constructors, destructors, overloading and overriding inline member functions, static class member, friend functions, dynamic memory allocation. Inheritance, single inheritance, types of base classes, types of derivation, multiple inheritance, container classes, member access control, function over loading, operator overloading, polymorphism, virtual functions, pure virtual functions, opening and closing of files, stream state member functions.

Suggested readings –

- |    |                                      |              |             |
|----|--------------------------------------|--------------|-------------|
| 1. | C++: How to program                  | Deitel       | Pearson     |
| 2. | Object Oriented Programming With C++ | Balagurusamy | TMH         |
| 3. | Let us C++                           | Y. Kanitkar  | BPB         |
| 4. | Object Oriented Programming With C++ | Vikas, Thada | CBC, Jaipur |
| 5. | Object Oriented Programming With C++ | Bhave        | Pearson/PHI |

**03BSI-104**

## **COMPUTER ARCHITECTURE**

**Course/Paper: 03BSI-104**  
**BSI Semester-III**

Basic computer organization and design. Instructions and instruction codes. Timing and control/ instruction cycle. Register/ types of register/ general purpose & special purpose registers/ index registers. Register transfer and micro operations/ register transfer instructions. Memory and memory function. Bus/ Data transfer instructions. Arithmetic logic micro-operations/ shift micro-operations. Input/ Output and interrupts. Memory reference instructions. Memory interfacing memory/ cache memory & cache controllers. Central Processing Unit : General Register Organization/ stacks organizations, instruction formats, addressing modes, Data transfer and manipulation. Program control. Reduced computer, pipeline/RISC pipeline vector processing/array processing. Computer Arithmetic : Addition, subtraction and multiplication algorithms, division algorithms. Floating point arithmetic operations, decimal arithmetic operations, decimal arithmetic operations. Input-Output Organization: Peripheral devices. Input/Output interface, ALU Asynchronous Data transfer, mode of transfer, priority interrupts, Direct memory Address (DMA). Input/ Output processor (IOP), serial communication. Evaluation of Microprocessor: Overview of intel 8085 to intel propentium processors. Basic microprocessor, architecture and interface, internal architecture, external architecture, memory and input/ output interface.

Suggested readings –

- |    |                                 |      |         |
|----|---------------------------------|------|---------|
| 1. | Computer System Architecture    | Mano | Pearson |
| 2. | Digital logic & Computer Design | Mano | Pearson |

**03BSI-201**

**SAD LAB**

**Course/Paper: 03BSI-201**  
**BSI Semester-III**

**03BSI-202**

**'C++' PROGRAMMING LAB**

**Course/Paper: 03BSI-202**  
**BSI Semester-III**

**Semester -IV**

**04BSI-101**

**JAVA PROGRAMMING**

**Course/Paper: 04BSI-101**  
**BSI Semester-IV**

Introduction to Java, History, Characteristics, Object oriented programming, data types, variable, arrays, difference between java and C++  
Control statements: Selection, iteration, jump statements, operators Introduction to classes, Class fundamentals, constructor, method stack class, inheritance, creating multilevel hierarchy, method overriding Package and interfaces, exception handling, string comparison, string buffer, utilities, classes, vector stack dictionary, applet class, introduction to AWT, working with frame windows. Java Beans, beans architecture, AWT components, advantages of JAVA Beans, beans serialization, JDBC, Class and methods, API components, JDBC Components, driver connectivity to database, processing result and interfaces, RMI, comparison of distributed and non distributed Java Programs, interfaces, RMI architecture Layer, ODBC, CORBA, services and products, CGI, structure of CGI.

Suggested readings –

- |    |                                  |              |         |
|----|----------------------------------|--------------|---------|
| 1. | Java2 – The Complete Reference   | Schildt      | TMH     |
| 2. | Programming with Java – A Primer | Balagurusamy | TMH     |
| 3. | Java: How to Program             | Deitel       | Pearson |
| 4. | Programming with Java            | Bhave        | PHI     |

## COMPUTER GRAPHICS

**Course/Paper: 04BSI-102**  
**BSI Semester-IV**

Development of computer graphics, basic graphics system and standards. Raster scan and Random scan graphics, continual refresh and storages displays, display processors and character generators. Colour display techniques, frame buffer and Bit bit operations concepts in raster graphics. Points/lines and curves/scan conversion/line drawing algorithms/circle and ellipse generation/polygon filling/conic-section generation, ante aliasing. Two-dimensional viewing, basic transformations, coordinate systems, windowing and clipping, segments, interactive picture construction techniques, interactive input/output devices.

Three-dimensional concepts, 3-D representation and transformations, 3-D viewing, algorithms for 3-D volumes, Spline curves and surfaces, Fractals, Quad tree and Octree data structures. Hidden lines and surfaces, Rendering and Animation.

Suggested readings –

- |    |  |                |         |
|----|--|----------------|---------|
| 1. | Computer Graphics                                | Donald, Bacher | Pearson |
| 2. | Computer Graphics:<br>Principles & Practice in C | Foley          | Pearson |

## 04BSI-103

### DATA COMMUNICATIONS AND NETWORKS

Course/Paper: 04BSI-103

BSI Semester -IV

Introduction: Uses of networks goals and applications. OSI reference model. Example Network-Novell Netware, ARPANET, NSFNET, The Internet. The Physical Layer : Transmission media : Twisted pair, Baseband and Broadband coaxial cable, Fiber optics; Wireless Transmission : Radio transmission, Microwave transmission, Infrared and light wave transmission; ISDN services; Virtual Circuits versus circuit Switching. Transmission in ATM Networks, Paging Systems, Cordless Telephones, Cellular telephones; Communication Satellite. The Data Link Layer : Framing, Error control, Flow control; Error detection and Correction; Protocols : Simplex stop and wait protocols, One bit sliding window, Using Go- Back n, Example: The Data Link Layer in the Internet. The Medium Access Sub Layer : Framing Static and Dynamic Channel Allocation in LANS and MANs; IEEE standard 802.3 and Ethernet; IEEE standard 802.4 and Token Bus, IEEE 802.5 and token Ring; Bridges; Bridges from 802 x to 802 y, Transparent Bridges, Source Routing Bridges.

The Network Layer : Network layer design issues, shortest path routing. Flooding, Flow based routine, Broadcast routine, Congestion control and prevention policies; Internet working; connectionless Internet working, Tunneling Internet work Routing, Fragmentation, Firewalls, IP address, Internet control protocols. The Transportation Layer : The transport service; Transport protocols : Addressing, Establishing and releasing a connection; The internet transport protocols : TCP. The Application Layer : Network Security, Electronic mail.

Suggested readings –

- |    |                                   |           |         |
|----|-----------------------------------|-----------|---------|
| 1. | Data Communication & Networking   | Foruazan  | TMH     |
| 2. | Computer Networks                 | Tanenbaum | Pearson |
| 3. | Data & Computer Communications    | Stallings | Pearson |
| 4. | Understanding Data Communications | Held      | Pearson |

## 04BSI-104

### E-COMMERCE

Course/Paper: 04BSI-104

BSI Semester -IV

Electronic Commerce Frame Work, Electronic and Media Convergence, Traditional vs. Electronic Business Applications, The Anatomy of E Commerce Applications. Overview of Mobile Computing Technology, Mobile Data Internet and Mobile Computing Applications.

Networks- Security and Firewalls- Client Server Network Security Threads, Firewalls and Network Security, Data Message Security, Encrypted Documents and Electronic Mail, . Architectural Framework for Electronic Commerce, World Wide Web as Architecture, Consumer Oriented E-Commerce, Electronic Data interchange (EDI), EDI Application in Business, EDI Security Document Management and digital libraries. Consumer Oriented Applications, Mercantile Process Models, Mercantile Models from the Consumer's Perspective, Mercantile models from the Merchant's Perspective.

Suggested readings –

- |    |                         |                |                |
|----|-------------------------|----------------|----------------|
| 1. | E-Commerce              | Whitely        | TMH            |
| 2. | Frontiers of E-Commerce | Kalakota       | Pearson        |
| 3. | E-Commerce              | Pilania, Dixit | Genius, Jaipur |



**04BSI-201**

**JAVA PROGRAMMING LAB**

**Course/Paper: 04BSI-201**  
**BSI Semester -IV**

**04BSI-202**

**COMPUTER GRAPHICS LAB**

**Course/Paper: 04BSI-202**  
**BSI Semester -IV**

**Semester - V**

**05BSI-101**

**PROGRAMMING IN VISUAL BASIC**

**Course/Paper: 05BSI-101**  
**BSI Semester -V**

Visual Basic overview and environment. Overview of main screen/Tiltbar/tool bar/tool box. Using menus/customizing a form/building the user interface/cradling controls/command buttons/Text boxes/labels/image controls.

Program Elements: Statements in Visual basic/writing codes/dialog box, variables/ types of variables/strings/numbers. Writing procedures. Visual basic program structure. Project, Forms/modules and frames. Projects with multiple. Forms, Displaying in formation on Forms/picture boxes/Textboxes/Printer objects controlling program flow/built-in functions/user defined functions and procedures. Array, grids and records/sorting and searching of records. Objects/object oriented programming/creating objects/building classes. Simple programmes in visual basic.

Suggested readings –

- |    |  |                      |                   |
|----|--|----------------------|-------------------|
| 1. | Visual Basic 6 Black Book                  | Gurmeet Singh        | Laxmi Publication |
| 2. | Mastering Visual Basic 6.0                 | Erangless BPB        |                   |
| 3. | Visual Basic for Programmers               | Deitel               | Pearson           |
| 4. | Visual Basic 6                             | Gurmeet Singh (Aman) | Firewall Media    |
| 5. | Visual Basic 6.0<br>The Complete reference |                      | TMH               |

## 05BSI-102

# TECHNICAL DOCUMENTATION

**Course/Paper: 05BSI-102**

**BSI Semester –V**

### **TECHNICAL DOCUMENTATION PRESENTATION**

- Accuracy & Conciseness in Technical English
- Structure Format etc. for Technical Reports & Thesis
- Comparing & contracting other aspects of short reports & long dissertations.

### **COMMUNICATION SKILLS**

- Communication Process : Concept & importance
- System of Communication : Format & internal, Barrier to effective communication.
- Principles of business communication : Planning & conduct, conversations, interview & Discussion. The preparation of oral statements, effective listening, telephonic communication.
- Written Communication: guides to effective writing for business correspondence including letters and job application. Memorandum, Office orders, Reports.
- Non-Verbal Communication : Importance and Type-cluster and congruency Kinetics Vocal Cues.
- Modern Forms of Communication : Telex, Fax, Telegram Teleconferencing & Email.
- Practical in Business Communication : Report writing, Public Speaking, Seminars, Presentation, Interview, Group Discussion, Effective Listening..

## 05BSI-103

# OPERATING SYSTEM

**Course/Paper: 05BSI-103**

**BSI Semester –V**

Operating Systems and Resource Manager, Operating system classifications, simple monitor, multiprogramming, timesharing, real time systems, multiprocessor systems, operating systems services. File System : File supports, access methods, allocation methods-contiguous linked and index allocation; directory systems single level, tree-structure, a cyclic graph and general graph directory, file protection. CPU Scheduling: Basic scheduling concepts, Process overviews, process states, multiprogramming, Schedulers, and Scheduling algorithms, multiple- processor scheduling. Memory Management: Bare machine approach , resident monitor, Partition, Paging and segmentation, virtual memory, demand paging. Deadlocks : Deadlock Characterizations, deadlock prevention, avoidance detection and recovery. Resource Protections : Mechanisms, Policies & domain of protection, Access matrix and its implementation, dynamic protection structures. Case Study of Windows-NT: Design Principle; System components, Environment subsystem; File System, Programmer Interface.

Suggested readings –

- |    |                             |               |                    |
|----|-----------------------------|---------------|--------------------|
| 1. | Operating System Principles | Galvin,Gagne  | John Willey & sons |
| 2. | Modern Operating Systems    | Tanenbaum     | Pearson            |
| 3. | Operating Systems           | Dhamdhare     | MGH                |
| 4. | Operating System concepts   | Manish k. Sah | Ashirwad, Jaipur   |

## **05BSI-104**

### **SOFTWARE ENGINEERING**

**Course/Paper: 05BSI-104**

**BSI Semester –V**

Software Engineering : Definition and paradigms, A generic view of software engineering. Requirements Analysis : Statement of system scope, isolation of top level processes and entities and their allocation to physical elements, refinement and review. Analyzing a Problem creating a software specification document, review for correctness, consistency, and completeness. Designing Software Solutions : Refining the software Specification; Application of fundamental design concept for data, architectural and procedural designs using software blue print methodology and object oriented design paradigm; creating design document : Review of conformance to software requirements and quality. Software Implementation: Relationship between design and implementation: Implementation issues and programming support environment; Coding the procedural design, Good coding style and review of correctness and readability. Software Maintenance: Maintenance as part of software evaluation, reasons for maintenance, types of maintenance (Perceptive, adoptive, corrective), designing for maintainability, techniques for maintenance. Comprehensive examples using available software platforms/case tools, Configuration Management.

Suggested readings –

- |    |                              |              |                |
|----|------------------------------|--------------|----------------|
| 1. | Software Engineering         | Pressman     | TMH            |
| 2. | Software Engineering         | Sommerville  | Pearson        |
| 3. | Advance Software Engineering | Shalini Puri | Genius, Jaipur |

## **05BSI-201**

### **VISUAL BASIC LAB**

**Course/Paper: 05BSI-201**

**BSI Semester –V**

## **05BSI-202**

### **OPERATING SYSTEM LAB**

**Course/Paper: 05BSI-202**

**BSI Semester –V**

## Semester - VI

### 06BSI-101

## MULTIMEDIA BASIC

Course/Paper: 06BSI-101

BSI Semester –VI

Introduction and Hardware: Definition of Multimedia, CD-ROMs and Multimedia applications, Multimedia requirements- Hardware, Software, Creativity and organization, Multimedia skills and training Macintosh versus PC, the Macintosh platform, PC platform, Connections, Memory and storage devices, input devices, output hardware, Communication devices. Multimedia Software: Basic tools, painting and drawing tools, OCR software, Sound editing programs, Animation devices and digital movies and other accessories, Linking multimedia objects, office suites, word processor, spreadsheets presentation tools, Types of Authoring tools card and page based, icon based and time based authoring tools, object oriented tools. Production Building Blocks: Test-using test in Multimedia, Computers and Text, Font editing and Design tools, Hyper media and Hyper text, Sounds-multimedia system sounds MIDI versus Digital Audio, Audio file formats, Working with sound in Windows, Notation interchange file format (NIFF), Adding sound. Production Tips: Image-creation, making still images, images colors, Image, File format, Animation-principles of animation, making workable animations Video, using video, Broadcast video, Standard, Integrating Computer and TVs, shooting and editing Video, using Recording formats, Video tips, Video Compression. Multimedia Project Development and Case Studies: Project planning, Estimating, RPFs and Bid proposals, Designing, Producing acquiring and using contents, Using Telnet, Testing, Preparing for delivery, CD-ROM Technology and Standards. Designing for the Word Wide, working on the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web.

Suggested readings –

- |    |   |                      |                            |
|----|---|----------------------|----------------------------|
| 1. | Multimedia:<br>Computing, Communication & Application | Steinmets, Nahrstedt | Pearson                    |
| 2. | Fundamentals of multimedia                            | Neeraj Bhargava      | Shikshak Prakashan, Jaipur |
| 3. | Multimedia making It work                             | Vaughan              | TMH                        |
| 4. | Multimedia Systems                                    | Buford               | Pearson                    |

### 06BSI-102

## RELATIONAL DATABASE MANAGEMENT SYSTEM

Course/Paper: 06BSI-102

BSI Semester –VI

Distributed database design, architecture of distributed processing system, data communication concept, data placement, placement of DDBMS, and other components, concurrency, control and recovery, transaction management, need of recovery, recovery techniques, , blocking, dead locks, introduction to query optimization. Query optimization and processing, algorithms for external sorting serializability, select and join, object and set operations, heuristics in query optimization, temporal database concept, multimedia database, data-mining, association rule, classification, application, data warehousing, need architecture, characteristics, data layer.

Introduction to SQL, security and integrity of databases, security specifications in SQL. Oracle RDBMS: Overview of three tier client server- technology, Modules of Oracle, & SQL\*Plus Data Types, Constraints, Operators, DDL, DML, DCL(Create, Modify, Insert, Delete and Update; Searching, Matching and Oracle Functions) Data types, PL/SQL functions, Error handling in PL/SQL, package functions, package procedures, Oracle transactions, SQL stored Procedures.

Database Triggers: Introduction, Use & Type of Database Triggers, Triggers Vs Declarative Integrity Constraints, BEFORE vs AFTER Trigger combinations, Creating a Trigger, Dropping a Trigger.

Suggested readings –

- |    |  |                  |         |
|----|--|------------------|---------|
| 1. | Database System Concepts                           | Korth, Sudarshan | TMH     |
| 2. | Database Concepts                                  | Elmasri, Nawathe | Pearson |
| 3. | Database Management Systems                        | Raghuramakrishan |         |
| 4. | SQL, PL/SQL,<br>The Programming language<br>Oracle | I. Bayross       | BPB     |
| 5. | Introduction to<br>Database Management Systems     | Kahate           | Pearson |

**06BSI-101**

**MULTIMEDIA LAB**

**Course/Paper: 06BSI-101**  
**BSI Semester –VI**

**06BSI-102**

**RELATIONAL DATABASE MANAGEMENT SYSTEM LAB**

**Course/Paper: 06BSI-102**  
**BSI Semester –VI**