

**BCA Program Structure and Credits Mapping :**

Semester	Course Code	Paper	Credit	Contact Hours	Marks		
					Internal	External	Total
1	DCA - 101	Principle of Management	4	12	30	70	100
1	DCA - 102	Business Communication	4	12	30	70	100
1	DCA - 103	Principles of Prog. & Algorithm	3	9	30	70	100
1	DCA - 104	Modern Operating Environment & M.S. Office	4	12	30	70	100
1	DCA - 105	Lab - Principles of Prog. & Algorithm	2	6	30	70	100
2	DCA - 106	Computer Applications in Statistics	4	12	30	70	100
2	DCA - 107	Introduction to Database Management System	4	12	30	70	100
2	DCA - 108	E-commerce Concepts	4	12	30	70	100
2	DCA - 109	C-programing	4	12	30	70	100
2	DCA - 110	Lab - C Programming	1	3	30	70	100
3	DCA - 111	Data Structure Using C	4	12	30	70	100
3	DCA - 112	Discrete Mathematics	3	9	30	70	100
3	DCA - 113	Introduction to Operating Systems	3	9	30	70	100
3	DCA - 114	RDBMS (Oracle)	3	9	30	70	100
3	DCA - 115	Lab- Data Structure Using C	3	9	30	70	100
4	DCA - 116	Object Oriented Programming using C++	4	12	30	70	100
4	DCA - 117	Computer Networks	4	12	30	70	100

4	DCA 118	- Programming In Visual Basics	4	12	30	70	100
4	DCA 119	- Enterprise Resource Planning	4	12	30	70	100
4	DCA 120	- Lab- Programming In Visual Basics	2	6	30	70	100
5	DCA 121	- Software Engineering	4	12	30	70	100
5	DCA 122	- Dot Net Programming	4	12	30	70	100
5	DCA 123	- Java Programming	4	12	30	70	100
5	DCA 124	- Web Technologies	3	9	30	70	100
5	DCA 125	- Lab - Java Programming	1	3	30	70	100
6	DCA 126	- Object Oriented Software Engineering	2	6	30	70	100
6	DCA 127	- Software Testing	2	6	30	70	100
6	DCA 128	- Advanced Java	2	6	30	70	100
6	DCA 129	- Lab- Advanced Java	1	3	30	70	100
6	DCA 130	- Project Work	8	24	30	70	100

\* One Credit of Lab Course would have 30 hours of lab based practical. Similarly project work would need 30 hours of project based activities for project preparation.

Table of Contents

## **Year 1: Syllabus**

### **Business Communication Skills**

#### **Chapter 1: Attitudes**

1.1 Introduction - 1.2 Attitude and Behaviour - 1.3 Structure of Attitude - 1.4 The function of attitude - 1.5 Formation of attitude - 1.6 Strength of Attitude - 1.7 Importance of attitude - 1.8 Steps in Developing Positive Attitude - 1.9 Measuring Attitude - 1.10 Summary - 1.11 Self Assessment Questions - -

#### **Chapter 2: Goal Setting**

2.1 Introduction - 2.2 Concept of goals, objectives and aims - 2.3 Timeline for Goals - 2.4 Characteristics of goals - 2.5 Importance of goals - 2.6 Significance of goals - 2.7 Activity in goal setting - 2.8 Common obstacles of goals achievement - 2.9 Techniques to achieve goals - 2.10 Summary - 2.11 Questions - -

#### **Chapter 3: Time Management**

3.1 Introduction - 3.2 Importance of effective Time management techniques - 3.3 Significance of effective time management techniques - 3.4 What is Time management? - 3.5 Barriers to effective time management - 3.6 Time management tools and techniques - 3.7 Summary - 3.8 Self-assessment questions - -

#### **Chapter 4: Stress Management**

4.1 Introduction - 4.2 Why is Stress created? - 4.3 Definition of Stress - 4.4 Types of stress - 4.5 Stress Management Techniques - 4.6 Why to manage stress effectively? - 4.7 Sources of stress - 4.8 Stress coping ability - 4.9 Measures to manage stress - 4.10 Principles of stress management - 4.11 Summary - 4.12 Self assessment question - -

#### **Chapter 5: Communication Skills**

5.1 Introduction - 5.2 Definition of Communication - 5.3 Significance of Business Communication - 5.4 Proper Selection of Means of Communication - 5.5 Communication Gap - 5.6 Communication Skills - 5.7 - Summary - 5.8 Self Assessment - -

#### **Chapter 6: Process of Communication**

6.1 Introduction - 6.2 Process of Communication - 6.3 Feedback is a key for effective communication - 6.4 Guidelines to effective communication - 6.5 Forms of Communication - 6.6 Summary - 6.7 Self Assessment - -

#### **Chapter 7: Body Languages**

7.1 Introduction - 7.2 Concept of Body Language - 7.3 Types of Body Language - 7.4 Uses of Body Language - 7.5 Effects of Positive Body Language at Workplace - 7.6 Body Language – Postures and Interpretation - 7.7 How your body language alters your state of mind? - 7.8 Summary - 7.9 Self Assessment Questions - -

## **Chapter 8: Emotional Intelligence**

8.1 Introduction - 8.2 Concept and Definitions - 8.3 Elements of Emotional Intelligence - 8.4 Organizational Application - 8.5 Conflict Management - 8.6 Summary - 8.7 Self Assessment Questions

## **Chapter 9: Interpersonal Communication**

9.1 Introduction: interpersonal communication - 9.2 Communication and Emotion - 9.3 Definition of Interpersonal Communication - 9.4 Significance of Interpersonal Relationships and communication - 9.5 Enhance your interpersonal communication and relationships - 9.7 Self Assessment Question - -

## **Chapter 10: Listening Skills**

10.1 Introduction - 10.2 Concept of Listening - 10.3 Significance of listening. - 10.4 Types of listening - 10.5 Listening skills - 10.6 Benefits of listening - 10.7 Summary - 10.8 Self-assessment questions

## **Modern Operating Environment and MS Office**

**Chapter 1-Introduction, What is a Computer?, History of Computers, Characteristics of Computers, Concepts of Hardware and Software, Types of Software, Evolution and Generation of Computers, Types of Computers, Limitations of Computers, Application Areas of computers**

## **Chapter 2-Structure And Working f Computer**

Structure-Introduction, Block Diagram of a Computer, CPU, Bus Structure

## **Chapter 3-Input/Output Devices**

Structure-Introduction, Input Devices, Output Devices

## **Chapter 4-Computer Memory**

Structure-What is Memory?, Primary(Semiconductor) Memory, Secondary Memory and Storage Devices

## **Chapter 5-Computer Language and Software**

Structure- Introduction, Algorithm, Flowchart, Types of Programming Languages, Compilers and Interpreters, Characteristics of a Good Programming Language, Software

## **Chapter 6-Operating System**

Structure- Introduction to OS, Evolution of Operating System, Functions of Operating Systems, Types of Operating Systems, Windows Operating System, Components of the Windows O.S, Running Windows Applications, Switching between Applications, Windows Accessories, Difference between DOS and Windows Operating System, Linux O.S

## **Chapter 7-Networking**

Structure-Introduction, Computer Network, Communication Modes, Data Transmission, Direction of Transmission Media, Network Structure, Network Topologies, Internet

### **Chapter 8-MS Office**

Structure-Introduction, Introduction to Ms-Word 2007, MS-Exel 2007, MS-PowerPoint 2007, MS-Access 2007

## **Principles of Management**

### **Chapter 1: Introduction to Management**

Structure - Concept of Management, Nature or Characteristics of Management, Importance or Significance of Management, Functional Areas of Management, Managerial Roles, Managerial Skills, Levels of Management, Concept of PODSCROB, Managerial Grid

### **Chapter2: Evolution of Management Thoughts**

Structure - Evolution of Management Thoughts, Contribution of F.W Taylor, Contribution of Henry Fayol, Fayol's Fourteen principles of Management, Taylorism Vs Fayolism, Contingency Approach to Management

### **Chapter 3: Planning and MBO**

Structure - Concept of Planning, Nature and Characteristics of Planning, Essentials of a Sound Plan, Need and Importance of Planning, Limitations of Planning, Elements of Planning, Steps in Planning, Concept of Management by Objectives(MBO), Characteristics of MBO, Process of MBO, Advantages of MBO, Limitations of MBO

### **Chapter 4: Decision Making**

Structure - Concept of Decision -Making, Importance of Decision-Making, Process of Decision, Techniques of Decision-Making, Types of Managerial Decisions, Essentials of Sound Decision-Making,

### **Chapter 5: Organizing I**

Structure - Concept of Organization, Nature and Characteristics of Organization, Organization Structure, Formal Organization, Informal Organization, Formal Organization Vs Informal Organization, Concept of Line and Staff Organization, Features of Line and Staff Organization, Conflict between Line and Staff Organization, Remedies for Line and Staff Conflict, Concept of Matrix Organization, Features of Matrix Organization, Advantages of Matrix Organization, Disadvantages of Matrix Organization, Concept of Departmentation, Bases of Departmentation, Significance of Departmentation

### **Chapter 6:Organizing-II**

Structure - Concept of Span of Control, Factors Affecting Span of Control, Graicunas Theory of Span of Control, Concept of Centralization, Concept of Decentralization, Advantages of Decentralization,

Factors Determining Degree of Decentralization, Centralization Vs Decentralization, Concept of Delegations of Authority, Barriers of Effective Delegation, Principle of Delegation Effective, Authority and Responsibility

### **Chapter 7: Directing and Leadership**

Structure - Concept of Directing, Process of Directing, Principles of Direction, Concept of Leadership, Qualities of a Successful Leader, Leadership Styles

### **Chapter 8: Co-ordination and Controlling**

Structure -Concept of Co-Ordination, Importance of Co-ordination, Coordination as an Essence of Management, Concept of Controlling, Nature of Controlling, Process of Controlling, Requirements of a Good Control System, Purpose or Importance of Controlling, Control Techniques

### **Chapter 9: Recent Trends in Management**

Structure - Concept of Green Management, Features of Green Management, Concept of Corporate Social Responsibility(CSR), Features of Corporate Social Responsibility, Areas of Corporate Social Responsibility, Arguments for Corporate Social Responsibilities, Arguments against Corporate Social Responsibility

## **Principles of Programming & Algorithms**

### **Chapter 1-Introduction to c language**

Structure-Introduction to C language, Application Areas, Features of C, Program Development Cycle, Structure of a C Program

### **Chapter 2-Language Fundamentals**

Structure-C Character Set, C Tokens, Identifiers and keywords, Constants, Variables, Data Declarations and Definitions

### **Chapter 3-Operators**

Structure-Operators and Expressions, Statements

### **Chapter 4-Built-In Operators and Function**

Structure-Introduction, Character Input and Output, String input and Output, General Output/Formatted Output, Formatted input, Concept of Header Files, What is a Preprocessor ?, Preprocessor Directives

### **Chapter 5-Control Structures**

Structure-Introduction, Selection/Decision making statement, Iterative statement, The for Loop, Jump Statements

### **Chapter 6-Introduction to problem solving**

Structure -Introduction, Problem solving Techniques, Steps in problem solving Algorithm and Flowcharts, Characteristics of an Algorithm, Conditionals in Pseudocode, Loops in Pseudocode, Loops in Pseudocode, Time Complexity, simple Examples: Algorithms

### **Chapter 7-Simple Arithmetic Problems**

Structure-Program for Addition of Two Integers, Program for Multiplication of Two Integers, Program for Division of Two Integers, Program for determining Number is +ve or -ve, Program for determining Number is Odd or Even, Program for finding Maximum of Two Numbers, Program for Finding Maximum of Three Numbers, Program of Sum of First N Numbers, Program for Reversing Integer Number, Program for Table Generation of N Number, Program for Factorial, Program for finding Sine of a Number, Program for finding Cosine of a Number, Program for Combinations, Program for Permutation, Program for Pascal Triangle, Program for Finding Prime Number, Program to Find Factors of a Number, Program for Swapping of Two Integers

### **Chapter 8-Functions**

Structure-Introduction, What is a Function ?, Functions and Structured Programming, How a function Works?, Library and User defined Functions, Function Declaration and Definition, Writing a Function, Calling a Function, Passing Arguments to a Function, Functions with Variable Arguments, Command Line Arguments, Recursion, Function Returning a Pointer

### **Chapter 9-Storage Classes**

Structure-Meaning of Terms, Scope, Storage Classes

## **Computer Application In Statistics**

### **Chapter 1- Introduction to Statistical Functions of Excel**

Structure - Introduction Definitions, Statistical Population, Census, Sampling, Advantages of Sampling, Classification, Spreadsheet

### **Chapter 2- Methods Of Counting**

Structure - Counting Techniques, Fundamental Principle of Counting, Permutations, Combinations, Some Standard Results,

### **Chapter 3- Element of Probability Theory**

Structure - Introduction, Sample Space and Events, Algebra of Events, Classical Approach of Probability, Axiomatic Approach, Probability of an Event: Properties, Independence of Events

### **Chapter 4- Standard Discrete Distributions**

Structure - Introduction, Concept of a Random Variable, Discrete Random Variable, Probability Mass Function (PMF), Cumulative Distribution Function (CDF), Mathematical Expectation, Standard Probability Distributions

## **Chapter 5- Simulation Techniques**

Structure - Introduction, Definition, Random Number Generator, Monte Carlo Simulation, Model Sampling From Discrete Distributions, Computer Aided Simulation, Merits and Demerits of Simulation

## **C-Programming**

### **Chapter 1. An Overview of C**

Structure:-History, Developing of C, Where C Stands?, Program Developing Cycle, The Form of a C Program, Structure of a 'C' Program, Compilers and Interpreters, Executing A 'C' Program

### **Chapter 2. Variable, Data Types, Operator And Expression**

Structure:- Introduction, Character Set, C Tokens , Data Types in c, Variables, Data Declaration and Definitions, User Defined Type Declaration, Operation and Expressions, Type Conversation in Expressions, Precedence and Associativity of Operators

### **Chapter 3. Built In I/O Functions**

Structure:- Introduction, Unformatted Console I/O Operations, Formatted Console I/O Operations

### **Chapter 4. Control Statement**

Structure:-Introduction, Selection/Decision Making Statements, Iterative Statements, Jump Statements, Compound Statement, Null Statement

### **Chapter 5. Array And String**

Structure:-Introduction, Array Declaration, One Dimensional Array, Multidimensional Arrays, Strings

### **Chapter 6. Pointers**

Structure:-Introduction, Memory Organization, Basic of Pointers, Application of Pointers, Using pointers, Pointers Expression, Precedence of & AND \* Operators, Pointer to pointer, Pointers to Constant Objects, Constant Pointer, Dynamic Memory Allocation, Pointer and Arrays, Pointers and Character String, Array of Pointers

### **Chapter 7. Function**

Structure:-Introduction, What is a Function?, Functions and Structured Programming, How a Function Works?, Library and User Defined Functions, Function Declaration and Definition , Writing a Function, Calling a Function , Types of Functions, Methods of passing Arguments, Arrays and Functions, Pointers and Function, Recursion

### **Chapter 8. Storage Classes And Scope**

Structure:-Meaning of Terms, Scope, Storage Classes

### **Chapter 9. Structurev, Union, Enumeration And typedef**

Structure:-Structures, Structures and Enumerated Data Type, Union, Difference between Structure and Union

### **Chapter 10. C Preprocessor**

Structure:-What is a Preprocessor?, Preprocess Directives

### **Chapter 11. File Handling**

Structure:-Introduction, Stream, Types of Files, Operation on a File, Error Handling during I/O Operations, Random Access to Files

### **Chapter 12. Bitwise Operators**

Structure:-Introduction, Application, Bit Fields

### **Chapter 13. Graphic In C**

Structure:-Introduction, Basic Concepts, Drawing Simple Graphic Objects, Output Text

### **Chapter 14. Command Line Arguments**

Structure:-Introduction, Advantages of Command Line Arguments

## **E-Commerce Concepts**

### **Chapter 1: Introduction to Electronic Commerce**

Structure:-E-commerce, Main Activities of E-Commerce, Goals of E-Commerce, Technical Components of E-Commerce, Functions of E-Commerce, Advantages and Disadvantages of E-Commerce, Scope of E-Commerce, Electronic Commerce Applications, Electronic-Business, E-Commerce v/s E-Business

### **Chapter 2: Building Own Website**

Structure:-Introduction, What does a Website do?, Reasons to Building a Websites, Benefits of Having a Website, Bandwidth Requirement, Cost of Building a Website, Time Consumed, Reach or Accessibility of Website, Register a Domain Name, Web Promotion, Banner Exchange, Shopping Bots, Target E-mails

### **Chapter 3: Internet and Extranet**

Structure:-Internet, Tools and Services of Internet, Hardware and Disadvantages of Internet, Intranet Security, Planning and Creating an Internet, Advantages and Disadvantages of Internet, Intranet Security, Planning and Creating an Intranet, Advantages and Disadvantages of Intranets, Features of Intranet, Components of Intranet Information Technology Structure, Extranet, Application of Extranet, Advantages and Disadvantages of Extranet, Internet versus Intranets, Extranet Versus Intranet, Development of Intranet

### **Chapter 4: Electronic payment System**

Structure:-Introduction , Requirements for Electronics Payment System, Characteristics of Electronics Payment System, Traditional Payment System, Process of Electronics Payment System, Types of Electronics Payments Systems, E-Payments Tools, Electronics Funds Transfer , payment Cards, Micropayment and Other Payment Systems , Electronic Bill or Paperless Bill Presentation and Payment, Need of E-payment, Payment Considerations, Using Payment Services Providers, Value Exchange System, Modern/Mobile payment of Cash,

### **Chapter 5: Technology Solution**

Structure:-Introduction , Protecting Internet Communication, Encryption, Symmetric Key Encryption, Public key Encryption, Public key Encryption Using Digital Signatures, Digital Envelopes, Digital Certificates, Limitation to Encryption Solutions

### **Chapter 6: E-com Security**

Structure: Introduction, E-Commerce Security Environment, Security Threats in E-Commerce Environment, Malicious Code and Unwanted Programs, Phishing and Identity Theft, Hacking and Cyber Vandalism, Credit Card Fraud/Theft, Spoofing, Denial of services(DOS), Distributed Denial of Service Attack (DDos)

## **Introduction to Database Management System**

### **Chapter 1-Basic Concepts**

Structure-Database and Database Users., Data Independence

### **Chapter 2-Database Design Using ER Model**

Structure-ER Model for Conceptual Design, Relationships, Relationship Sets, Mapping Cardinalities, Types of Keys, ER – Diagram

### **Chapter 3-Relational Model**

Structure-Relational Data Model, Relational Algebra, SQL- A Relational Database Language, Indexing, Views , Security in SQL, Triggers.

### **Chapter 4-Conventional Data Models and Systems**

Structure-Network Data Models and IDMS Systems , Hierarchical Data Model

### **Chapter 5-Relational Database Design**

Structure-Introduction , Functional Dependencies, Undesirable Properties of A Bad Database Design, E.F. Codd's Rules, Steps followed By Application Developer, Normalization Process , Denormalisation., Loseless Joins , Decompositions

### **Chapter 6-Storage and File Structure**

Structure-Introduction, Overview of Physical Storage Media, Magnetic Disks, Raid , Tertiary Storage, Storage Access, File Organization, Organization of Records in Files., Data Dictionary Storage., Factors Used for Evaluation of the Above Techniques,

### **Chapter 7-Transaction and Concurrency Control**

Structure-Concept of Transaction, Properties of Transaction, State of Transaction, Implementation of Atomicity and Durability, Concurrency Control Techniques, Concurrency Control

### **Chapter 8-Crash Recovery and Back up**

Structure-Why Recover Is Needed?, Storage Structure, Recovery and Atomicity, Failure with Loss of Nonvolatile Storage., Recovery from Catastrophic Failure, Remote Backup Systems

### **Chapter 9-Security and Privacy**

Structure- Introduction, Discretionary Access Control Method , Mandatory Access Control Method., Uses of Views in Security Enforcement , Overview of Encryption Technique for Database., Statistical Database Security

### **Chapter 10-NON-SQL DATABASE**

Structure-A Relational Database Management System, NoSQL Emerged From a Need., What is NoSQL

Year 2: Syllabus

## **DATA STRUCTURE USING C**

### CHAPTER-1. Basic Concept and Introduction to Data Structure

Structure - Pointers-An Introduction, Dynamic Memory Allocation, Algorithm Definition and Characteristics, Algorithm Analysis, Introduction to Data Structure, Abstract data type(ADT), Introduction to Array, Polynomial, Structure

### CHAPTER-2. Searching and Sorting Techniques

Structure - Introduction, Linear Search, Binary Search, Sorting, Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Heap Sort, Merge Sort, Comparison of Sorting Methods

### CHAPTER-3. Linked List

Structure - Introduction, Concept of Linked Organization, Implementation of Linked List, Type of Linked List, Operations on a Singly Linked List, Doubly Linked List, Circular Linked List

### CHAPTER-4. Stack and Queue

Structure - Introduction, Definition of a stack, Primitive Operations on Stack, Implementation of a stack, Application of Stack, Queue, Definition of a Queue, Operations on a Queue, Implementation of Queues, Types of Queues, Priority Queue, Doubly-Ended Queue(DEQUE), Applications of Queues

### CHAPTER-5. Trees

Structure - Introduction, Tree Terminology, Binary Trees, Representation on Binary Trees, Operations on Binary Tree, Traversing a Binary Tree, Binary Search, AVL Trees

### CHAPTER-6. Graphs

Structure - Graphs, Shortest Path Problem, Spanning Tree, Traversal of Graphs, Applications of Graphs

## **Discrete Mathematics**

Chapter 1:-Mathematical Logic

Structure:-1.Introduction, Connection, Implication, Propositional Equivalences, Tautological Implication, Normal Forms, Theory of Inference for Statement Calculus, Predicate Calculus

Chapter 3:-Permutations and Combination

Structure:-Introduction, Principles of Counting, Permutations, Combination

Chapter 4:-Number of Non-Negative Integer Solutions

Structure:- Introduction, Integer Solution of Linear Equation, Binomial identities

Chapter 5:-Principles of Inclusion and Exclusion

Structure:- Introduction, Principle of Inclusion and Exclusion, Derangements

Chapter 6:-Algebraic Structures

Structure:-Introduction, Algebraic System, Groups Permutation, Subgroups , Group Code, Decoding

## **INTRODUCTION TO OPERATING SYSTEM**

### **CHAPTER-1.Introduction to Operating System**

Structure - Introduction, Services Provided by OS, Types of Operating System

### **CHAPTER-2.System Structure**

Structure - User Operating System Interface, System Calls, Architecture of Computer System, Operating System Structure

### **CHAPTER-3.Process Management**

Structure - Process Concept, Process State, Process control Block, Context Switch, Operating on Processes, Types of Processes, Signals

### **CHAPTER-4.CPU Scheduling**

Structure - Introduction, Scheduling Concepts, Scheduling Criteria, Scheduling Algorithm, Operation System Examples

### **CHAPTER-5.Process Synchronization**

Structure - Introduction, Interprocess Communication, Critical Section Problem , Semaphores, Monitors, Classical Problems of Synchronization

### **CHAPTER-6.Deadlocks**

Structure - Introduction, System Model, Deadlock Characterization, Resource Allocation Graphs, Safe State, Deadlock Prevention, Banker's Algorithm for a Single Resource, Banker's Algorithm for Multiple Resources, Process Termination, Resource Preemption

### **CHAPTER-7.Memory Management**

Structure - Introduction, Swapping, Contiguous Memory Allocation, Free Space Management Techniques, Allocation Swap of Space, Virtual memory (Overlays), Paging, Page Replacement Algorithm, Demand Paging , Segmentation

### **CHAPTER-8.File System**

Structure - Introduction and File Concepts, Access Methods, File/Directory Structure, File Allocation Methods, File System Structure, Free Space Management

### **CHAPTER-9.I/O System**

Structure - Introduction, I/O Hardware, Application of I/O Interface, Direct Memory Access (DMA), Kernel I/O Subsystem, Dual Mode Operation , Disk Scheduling, Polling, Interrupts

## **RDBMS (Relational Database Management System)**

### Chapter-1.Introduction to RDBMS

Structure - Introduction, Introduction to Popular RDBMS Product And their Features, Difference between DBMS and RDBMS, Relationship among Application Programs and RDBMS

### Chapter-2.PL/SQL

Structure - Overview of PL/SQL, Data Types, PL/SQL Block, Exceptional Handling, Function, Procedures, Cursor, Database Triggers, Oracle Packages

### Chapter-3.Transaction Management

Structure - Transaction Concept, Transaction Properties, Transaction States, Concurrent Execution, Serializability, Recoverability

### Chapter-4.Concurrency Control

Structure - Concurrency Control, Lock Based Protocols, Timestamps-Based Protocols, Validation-Based Protocols, Deadlock Handling

### Chapter-5.Recovery System

Structure - Introduction, Failure Classification, Storage Structure, Recovery and Atomicity, Recovery with Concurrent Transactions, Remote Backup System

## **Computer networking**

### Chapter 1- Basics of Computer Networks

Structure - Introduction, Topology, Types of networks, Communication Types, Modes of Communication, Types of Network, Protocols and Standards

### Chapter 2- Network Models

Structure- Introduction, Design Issues of the Layer, Protocol Hierarchies, ISO\_OSI Reference Model, Terminology, Internet Model (TCP/IP), Addressing, IP Addressing

### Chapter 3- Transmission Media

Structure - Introduction, Classification of Transmission Media, Propagation Methods

### Chapter 4- Wired and Wireless LANs

Structure - Introduction, IEEE Standards, Standard Ethernet, Fast Ethernet, Giga Ethernet, Network Interface Cards (NIC), Wireless LAN

### Chapter 5- Network Connectivity Devices

Structure - Categories of Connectivity Devices, Network Security Device

### Chapter 6- Internet Basics

Structure - Concept of Internet and Extranet, Internet Information Server (IIS), Web Server, WWW (World Wide Web), Search Engines, Internet Service Providers (ISP), HTTP

## **ENTERPRISE RESOURCE PLANNING**

### CHAPTER-1. Enterprise Resource Planning

Structure-Introduction, What is ERP?, Need of ERP, Advantages of ERP, Disadvantages of ERP, Benefit of ERP, Limitation, Growth of ERP

### CHAPTER-2. ERP and Related Technologies

Structure-Business Process Re-Engineering (BPR), Management Information System (MIS), Decision Support System (DSS), Executive Support System(ESS), Data Warehouse , Data Mining, On-Line Analytical Processing(OLAP), Supply Chain Management(SCM), Customer Relationship Management (CRM)

### CHAPTER-3. RRP Modules and Vendors

Structure: RRP Modules, RRP Modules for Finance, RRP Modules for Production Planning, Control and Management, RRP Modules for Sales and Distribution, RRP Modules for Human Resource management,

RRP Modules for Inventory Control System, RRP Modules for Quality Management, RRP Market, Disadvantages of Non-ERP System, Benefits of Integration, Standardization of Data code

#### CHAPTER-4 ERP Implementation Life Cycle

Structure:-ERP Implementation Life Cycle, Role of Organization Management

#### CHAPTER-5.ERP Case Studies

Structure:-Post Implementation Review, ERP Case Study, ERP Demo Tool: ERP Next, ERP Next Demo, Customization

### **Object Oriented Programming C++**

#### Chapter-1.Principle of OOP's

Structure-Introduction, What is Object Oriented Development?, Object Oriented Methodology, Overview of procedure Oriented programming, What is Object Oriented Programming?, Object Oriented Languages

#### Chapter-2.Basics of C++

Structure-A Brief History of C and C++, Difference between C and C++, Features of C++, Advantages and Disadvantages of C++, Applications of C++, Writing and Executing a C++ Program, Program Structure and Rules, Sample C++ Program, Comments, Return Type of MAIN(), Namespace std, Header File, Output Statement (COUT), Input Statement (CIN)

#### Chapter-3.Expression

Structure-Introduction, C++ Tokens, Data types , Declaration of Variables, Initialization of Variables, Reference Variables, Operators, Type Cast Operator, Memory Management operators, Expression, Statement, Symbolic Constant, Type Compatibility

#### Chapter-4.function in C++

structure-Introduction, Passing Information-Parameters, Default Arguments, Constant Arguments, Function Overloading, Inline Functions, Recursive Functions

#### Chapter-5.Classes and Objects

Structure-Introduction, Class, Member Functions, Making an Outside Function Inline, Nesting Of Member Functions , Private Member Function, Arrays within a Class, Memory Allocation for Objects, Arrays of Objects, Objects as Function Arguments, Returning Objects, Const Member Function, Static Class Members, Pointer to Members, Local classes, Friend Functions, Unions and classes, Object Composition and Delegation

## Chapter-6.Constructor and Destructor

Structure-Introduction, Constructor, Multiple Constructors in a class, Constructor with Default Arguments, Dynamic Initialization of Objects, Const Object, Destructor

## Chapter-7.Operator Overloading and Type Conversion

Structure-Introduction, Overloading Unary Operators, Overloading Binary Operators, Limitations of Operator Overloading, this pointer, Overloading<<and>>Operators, Manipulation of String, Types Conversion

## Chapter-8.Inheritance

structure-Introduction, Single Inheritance, multiple Inheritance, Multilevel Inheritance, Hierarchical inheritance, Hybrid Inheritance, Container Classes, Virtual Base Classes, Construction in Derived classes, Virtual Function, Pure Virtual Functions, Abstract Classes

## Chapter-9.The C++ I/O System Basics

Structure-Introduction, C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted I/O Operations, Manipulators

## Chapter-10.Working With Files

Structure-Introduction, Creating a Stream, Opening a File, Closing a File, Checking For Failure With File Commands, Detecting the End-of-file, file Pointers and their Manipulation, Reading/Writing a character From a File, Write()and read() Functions, Buffers and Synchronization, Other Functions, Random Access File Processing, Updating a File :Random Access, Command Line Arguments

## Chapter-11.Template

Structure-Introduction, Generic Functions, A Function with Two Generic Data Types, Explicitly Overloading a generic Function, Overloading Function Templates, using Standard Parameters with Template Function, Generic Functions Restrictions, Generic Class, Using Default Arguments with Template Classes, Template Parameters, Template Specialization, The Typename and Export Keywords

## chapter-12.Exception Handling

Structure-Introduction, the STL Programming Models, Containers, Algorithms, Iterators, Function Objects, Allocators, Adaptors

## Chapter-13.Introduction to Standard Template library

Structure-Introduction, The STL Programming Model, Containers, Algorithms, Iterators, Function Objects, Allocators, Adaptors

## Chapter-14.Namespace

Structure-Introduction, Defining a Namespace, The Standard Namespace, Nested Namespace, Unnamed Namespace, Namespace Alias

Chapter-15.New Style Caste and RTRI

Structure-Introduction, New-Style Casts, Static\_cast, Dynamic\_cast, Const\_cast, Reinterpret\_cast, Run-Time Type Information(RTTI), A Simple Application of Run-Time Type ID, Typied can be applied to Templates classes

## **Programming in Visual Basics**

Chapter-1.Getting Started with V.B

Structure - Introduction, Installing of Visual Basics 6.0, Object Oriented Concept, Event Driven Programming Language, Reviewing the Basics of Forms and Controls, Working with Properties

Chapter-2.Constants, Variables, Operators, Control Structure, Looping

Structure- Introduction, Data types, Variables, Constant, Operators, Expression, Comments, Control Structures, Looping, Array

Chapter-3.Working With Control

Structure - Introduction, Adding Controls on Form, Working with Properties and Methods of Each Control, Creating MDI Applications

Chapter-4.Working with ActiveX Controls and Menus

Structure - Introduction, Creating Status Bar for your Program, Working with Progress Bar, Working with Toolbar and Setting up the Image List Controls, Study of Different Dialog Boxes, Creating a Menu System, Creating and Accessing Popup Menu, Adding or Modifying Menu at Run Time(Dynamic Menu), Adding Menu Items For MDI Child Form

Chapter-5.Working with Database

Structure - Introduction, Data Control, ADO Data Control, Developing ADO Application through ADODC and Coding

## **Year 3: Syllabus**

### **Dot Net Programming**

Chapter 1:-Introduction to .net Framework

Structure - Introduction, Integrated Development Environment, Event Driven Programming, NET Framework, Architecture of .NET, Developing Application, Features of .NET Framework, Advantages of .NET, Develop Simple .NET Application

Chapter 2:-Introduction to VB.NET

Structure - Basic of VB .NET, Control Structure, Loop Control Statements:Exit, Continue and Goto, Building Console Application, Build Windows Application, NOTEPAD

Chapter 3:-Object Oriented Programming in VB.NET

Structure - Introduction, Class and Object, Properties, Method and Events, Constructors and Destructure, Method Overloading, Inheritance, Access Modifiers, Method Overriding, Interfaces, Polymorphism, Exception Handling

Chapter 4:-Architecture of ADO.NET

Structure - Introduction, Data Provider and Data Set, Connection to Data base with Server Explore, Multiple Table Connection, Dada Binding, Navigation Data Source, DataGridView, DataFormWizard , Data Validation

Chapter 5.Crystal Report

Structure - Introduction, Connecting to the Database, Table and Queries, Field Explorer, Working with Multiple Tables

### **JAVA PROGRAMMING**

Chapter-1.Fundamentals of Object Oriented Programming

Structure-Introduction, Concept of OOP, Structure of Procedure Oriented Programming, Structure of Object Oriented Programming, Difference Between Procedure Programming and Object Oriented Programming Language, Features of C++, Fundamentals of Object Oriented Programming, Why Java is not 100% Object Oriented Language?

Chapter-2.Introduction to JAVA

Structure-Introduction , History of Java, The Byte Code, Java Development Kit (JDK), Java Virtual Machine (JVM), Java Runtime Environment, Advantages of Java, Disadvantages of Java

### Chapter-3.Programming Concepts of Basic Java

Structure- Java Program Structure, Compilation and Execution of Java Program , Command Line Argument, Class Path Problem, Constants, Variables and Data types, Operators and Expressions, Type Conversion(Casting), Operator Precedence in Java, Decision Making and Branching, Array Class

### Chapter-4.Java Classes

Structure-Java Classes, Creating Objects, Differentiate between Class and Object, Accessing Class Members, Types of Classes in Java, Constructor, Constructor Overloading, Difference between Constructor and Methods, Methods Overloading, Nesting of Methods, Static, The this Keyword , Nested and Inner Classes, Garbage Collection, Wrapper Classes, Autoboxing and Unboxing, Enumerated types

### Chapter-5 Inheritance

Structure-Inheritance:Extending a Class, Access Modifier, Abstract Class and Abstract Methods, Methods Overriding, Differentiate Between Method Overloading and Method Overloading, Final Keyword, Super Keyword, Down Casting and Up Casting, Dynamic Method Dispatch

### Chapter-6.Packages and Interfaces

Structure-Introduction, Problem with Multiple Inheritances, Java Interface, Implementing Interfaces, Accessing Interface Variable, Java Packages, Java API Packages, Using System Packages, Static Import, Package Visibility, Adapter Classes

### Chapter-7.Exception Handling

Structure-Java-Managing Errors And Exceptions, Exception, Exception Handling Mechanism, Throws, Difference between throw and throws keyword, Finally Statement, Throwing User Defined Exception, Nested Try Statement

### Chapter-8.Multithreading

Structure-Introduction, Java Multithreaded Programming, Java Thread, Main Thread, Creating Threads, Life Cycle of a Thread, Using Thread Methods, Thread Priority, Synchronization, Thread Scheduler

### Chapter-9.Abstract Window Toolkit

Structure-Abstract Window Toolkit, Why Abstract Window Toolkit?, Java.awt Packages, AWT Classes, Components, Container Class, Layout Managers, Event Handling, Delegating the Event, Event Sources., Event Listeners, Event Classes, Event Listener Interfaces, Handling Mouse Events, Handling Keyboard Events, Anonymous Inner Classes

### Chapter-10.Swing

Structure-Introduction, Java Foundation Classes, JFC Technologies , Features of Swing, Difference between Swing Packages and AWT, Pros and Cons of Swing, Swing Components, Java Swing Packages, Swing Basic Containers, Working with Swing

#### Chapter-11.Applets

Structure-Introduction of Java-Applet, Types of Applets , Differentiate between Applets and Application, Creating an Executable Applet, Steps involved in Developing and Testing in Applets, Running the Applet using Applet viewer, Adding Applet to the HTML file, Applet Structure and Elements, Applet Class, Applet Life Cycle, Applet Skeleton, Applet Tag, Aligning the Display, Designing a Web Page, Common Methods used in Displaying the Output, Displaying Numerical Values, Getting Input From the User, Updated() method, Repaint()method, Status Window, getCodeBase(), How to use an Audio Clip, Java-Graphics Programming, Using Control Loop in Applets, Drawing Bar Charts, Line Graph, The Color Class, Using Fonts with Applets

#### Chapter-12.Java Utility Packages

Structure- Hasing, Vector, Differentiate between Array and Vector, Math Class, Enumeration, Iterator , System, Random, String Class, String Buffer Class

#### Chapter-13.Streams and File

Structure-Introduction, Java.io.file Class, Java Stream Classes, Byte Streams Class, Character Stream Class, Difference between Byte Stream Classes and Character Stream Classes, Differentiate between Input Stream class and Reader Class, Differentiate between Output Stream Class and Writer Class, File Streams, File Input Stream and File Output Stream Data, Input Stream and Data Output Stream, Buffered Reader and Buffered Writer Class, File Reader and File Writer class, Print Writer, Filter Streams, Push back Input Stream, Pipe Stream, .Random Access File, Stream Tokenizer, File Operation, Serialization and Deserialization

### **Software Engineering**

#### Chapter 1.Overview of System Analysis and Design

Structure:-System Concepts, Categories of Information System, Software development Life Cycle(SDLC), Different Approaches and Models for System, The Role and Task of System Analyst, Skills required for a Good Software Analyst

#### Chapter 2.Software Requirement Specification Technique

Structure:Activities in Requirement Determination, Requirement Anticipation , Requirement Investigation, Requirement Specification, Solved Cases Study

#### Chapter 3.Information Requirement Analysis

Structure:-Decision Analysis Tools, Functional Decomposition Diagram(FDD), Process Modeling with Data Flow Diagrams, Entity Relationship Diagram:Identify Entity and Relationship, Data Dictionary, Solved Case Study

Chapter 4:-Designing of Input, Output and Program

Structure:-System Design, Design of Input and Control, Design of Output, User Interface Design, Design of program Specifications, Solved Case Study

Chapter 5:-Maintaining

Structure:-Introduction, Why We Need Software maintenance, Types of Maintenance, Maintenance Cost, Introduction to Legacy, Reverse Engineering, Documentation

Chapter 6:-Case Tools

Structure:-Introduction to Case Tools, Types of CASE Tools, Advantages and Disadvantages of Case Tools

Chapter 7:-Current Trends in Software Engineering

Structure:-Introduction, Software Engineering for Projects and Products, Web Engineering, Agile Process

## **Subject - WEB TECHNOLOGIES**

CHAPTER-1.HTML and CSS

Structure-HTML , HTML Sheet

CHAPTER-2.JavaScript

Structure-Client Side Scripting, Server Side Scripting, Introduction to JavaScript, Data Types and Literals, Operators, Control Structures and Looping, User Defined Functions, Predefined Functions, Arrays, Document Objects Model(DOM), DOM Objects, Window Object, Navigator Object, History Object, Location object, Core Language Object, Event Handling in JavaScript, Form Object and Validation on Forms

CHAPTER-3.JQuery and AJAX

Structure-Introduction to JQuery, Anatomy of JQuery Script, Traversing the DOM, Selecting Elements With JQuery, Refining and Filtering Selections, Selecting Form Elements, Working with Selection - Chaining, Getters and Setters, CSS Styling and Dimensions, Manipulating Elements, Manipulating Attributes, Utility Methods, Events, Animating Effects, Plugins, JQuery UI and Forms, AJAX Overview , JQuery's ALAX related methods, AJAX and Forms, AJAX Events

CHAPTER-4.Apache HTTP Server

Structure-Concept of Web Server, Editing httpd.conf Configuration file, Configuration Directives in httpd.conf, Add Site to /etc/hosts file, DocumentRoot, ErrorLog, Listen, Directory, Files, Location, Redirect, virtual Hosts , Modules, Creating .htaccess, .htpasswd file, Configuring httpd.conf, Secure Web Server

CAHPER-5.XML

Structure-Introduction to XML, Features of XML, XML and CSS Using XML, Data Source Object (DSO), DTD and Schemas, XML Namespaces, XSL Transformation(XSLT), SAX and DOM Parsers, Introduction to SOAP

## **Advance Java**

### Chapter 1:-JDBC

Structure - Introduction, Design of JDBC, Basic JDBC Program Concept, Drivers, Making the Connection, Executing SQL Commands, Executing Queries

### Chapter 2:-Networking

Structure - The Java .Net Package, Connection Oriented Transmission-Stream Socket Class , Creating a Socket to the remote host on a port(Creating TCP Client and Server), Simple Socket Program Example

### Chapter 3:-Servlet and JSP

Structure - Introduction, Servlet Life Cycle, Type of Servlets, Session Tracking, Cookie Class, Servlet-JDBC, Components of JSp, Execution Process of JSP Application, Building Simple Application Using JSP, JSP Session Object, JSP with Database

### Chapter 4.Multithreading

Structure - Threading Basic, Thread Life Cycle, Creating a Thread, Thread Priority, Thread Synchronization, Inter-Thread Communication, Implementation of Thread with Applet, The Runnable Interface

### Chapter 5.Java Beans and RMI

Structure - What is Bean?, Advantages of Java Beans,Using the Beans Development Kit, Introduction to Jar and Manifest Files, JavaBeans API, Remote Method Invocation, RMI Architecture, Stubs and Skeletons, Registry, Setting up RMI, Using RMI with Applet

## **OBJECT ORIENTED SOFTWARE ENGINEERING**

### CHAPTER-1.Object Oriented and Principles

Structure - What is Object Orientation, Object Oriented System Development, Identifying the Elements of an Object Model, Identifying Classes and Object, Specifying The Attributes (With Visibility), Defining Operations, Finalizing the Object Definition

### CHAPTER-2. Introduction to UML

Structure - Introduction, Concept of UML, Advantages of UML

### CHAPTER-3.Basic Structural Modeling

Structure - Classes, Relationship, Common Mechanisms, Class Diagrams

### CHAPTER-4.Advantages Structural Modeling

Structure - Advanced Classes, Advanced Relationship, Interface, Package Diagram, Object Diagram

#### CHAPTER-5.Basic Behavioral Modeling

Structure - Introduction:Terms and Concepts, Use cases and Use Case Diagram, Introduction Diagram, Sequence Diagram, Activity Diagram, State Chart Diagram

#### CHAPTER-6.Object Oriented Analysis

Structure - Iterative Development and the Rational Unified Process, Benefits of Iterative development, Inception, Understanding Requirements, Use Case Model From Inception to Elaboration, Elaboration

#### CHAPTER-7.Object Oriented Design

Structure - Software Development Methodologies, Object Oriented Design Model, System Design process, Object Design Process

#### CHAPTER-8.Architectural Modeling

Structure - Components, Component Diagrams, Development, Development Diagrams, Common Uses of Development Diagrams, Collaborations, Organizing Collaborations, Examples of Collaboration Diagrams

#### CHAPTER-9.Object Oriented Testing

Structure - Introduction, Object Oriented Testing Strategies, Test Case Design Of Object Oriented Software, Inter Class Test case Design

### **SOFTWARE TESTING**

#### CHAPTER-1.Software Testing

Structure - Introduction, Nature of Errors, Testing Principles and Fundamentals, Testing Fundamentals, Debugging

#### CHAPTER-2.Approaches to Testing-I

Structure - Introduction, A Software Testing Strategy for Conventional Software Architectures, Unit Testing, Integration testing, Software Testing Techniques, White Box Testing, Block Box testing, Gray (Gray)Box Testing

#### CHAPTER-3.Testing for specialized Environments

Structure - Introduction, Testing Graphical User Interface's (GUIs), Testing of Client/server architecture, Testing Documentation and Help Facilities, Testing For Real Time System

#### CHAPTER-4.Software Testing Strategies and Software Metrics

Structure - Introduction, System Testing, Performance Testing, Load Testing, Stress Testing, Regression Testing, Smoke Testing, security Testing, Recovery Testing, Verification, validation Testing, Agile Testing, Acceptance Testing, Introduction to Software Metrics, Basic Metrics, Complexity Metrics, Cyclomatic Complexity

CHAPTER-5.Specialized Testing and Testing Tools (Introduction)

Structure - Introduction, Test Case Design, Junit, Winrunner, loadrunner, Rational Robot