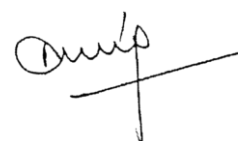


BACHELOR OF COMPUTER APPLICATION
(B.C.A.)
COURSE STRUCTURE
FIRST YEAR

II SEMESTER

Paper Code	Paper Name	Term Exam Max./Min. Marks	Internal Assessment Max./Min. Marks	Total Max./Min. Marks
C-201	JAVA Programming	50/20	50/20	100/40
C-202	Data Base Management System	50/20	50/20	100/40
C-203	Data Structure using 'C'	50/20	50/20	100/40
C-204	Principles of Management	50/20	50/20	100/40
C-205	Numerical Methods	50/20	50/20	100/40
C-206	Practical based on above Papers			100/40
Total marks of II Semester				600/300



BACHELOR OF COMPUTER APPLICATION (B.C.A.)

DETAILED SYLLABUS

SECOND SEMESTER

PAPERCODE: C-201

Java Programming

UNIT-I

Introduction, Java Tokens, Java Statements, Command Line Arguments, Programming Style, Constants, Variables, Data Types, Constants, Variables, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting, Java Program Structure, Operators, Expressions, Statements, Decision Statements, Control Structure or statement, JDK, JRE, and JVM (Java Virtual Machine), Class-path, Execution process of Java program.

UNIT-II

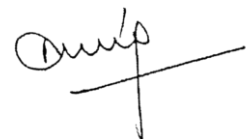
Defining a Class, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods and Inheritance: Extending a Class, interface, super, Overriding & Overloading Methods, final Variables and Methods, Classes, Finalize Methods, Abstract Methods and Classes, Visibility Control. Arrays, One, Dimensional Arrays, Creating an Array, Two Dimensional Arrays, Wrapper Classes.

UNIT-III

Packages: Introduction, Java API Packages, Using system Packages, Naming Conventions, Creating Packages, Accessing a Packages, Adding a Class to a Package, Hiding Classes. **Multithreaded Programming:** Introduction, Creating Threads, Extending the Thread Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, and Synchronization. **Managing Errors and Exceptions:** Introduction, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using finally Statement, Throwing Our Own Exceptions, Using Exceptions for Debugging.

UNIT-IV

Functions: String handling and its functions, Maths Functions. **Input/output-basics:** Input/output-basics streams and Byte and character streams, Character Reading from Keyboard by Input Stream Reader, Reading a Line/String from Keyboard by Buffered Reader, Standard I/O Streams Using Data Streams to read/write. **Applet:** Introduction of Applet, How Applets Differ from Application, Preparing to Write Applets, Building Applet Code, Applet Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet

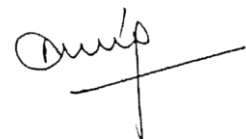


UNIT-V

Introduction to AWT programming, Graphics, Dialog Boxes, AWT Components/Controls, Layouts, Event Handling. JDBC architecture Establishing connectivity and working with connection interface, Working with statements, Creating and executing SQL statements, Working with Result Set, Socket Programming, Introduction to Swing, Servlet and JSP.

Suggested Books:

- 1.E. Balagurusamy, Programming with Java, A Primer Second Edition, Tata McGraw Hill, New Delhi.
- 2.P.Naughton and H. Schildt, JAVA: The Complete Reference, TMH, New Delhi 2005.
- 3.D.Jana, Java and Object Oriented Programming Paradigm, PHI, New Delhi, 2005

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BACHELOR OF COMPUTER APPLICATION (B.C.A.)

DETAILED SYLLABUS

SECOND SEMESTER

PAPERCODE: C-202

Data Base Management System

UNIT-I

Introduction: Database System Concepts, Database Users, and Architecture Introduction to Database System with example, Introduction to Traditional File Oriented System, Characteristics of the Database Approach, Components of Database System, Database Users, Advantages and disadvantages of Using a DBMS, Structure of DBMS, Database Schemas and Instances , DBMS Architecture, Data Independence, Database Languages and Interfaces, Classification of Database Management Systems.

UNIT-II

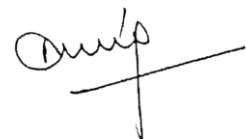
Data Modelling & Relational Database Management System Data Modelling Using the Entity Relationship Model: Entity Types, Entity Sets, Attributes, Keys, Relationships, Relationship Types, Roles, and Structural, Constraints, Weak Entity Types, ER Diagrams, Naming Conventions, Design Issues.

UNIT-III

The Relational Data Model: Relational Constraints and the Relational Algebra: Relational Model Concepts, Relational Constraints and Relational Database Schemas Update Operations and Dealing with Constraint Violations, Basic Relational Algebra Operations, Additional Relational Operations And Examples of Queries in Relational Algebra.

UNIT-IV

SQL:SQL and Database Design Theory and Methodology Structured Query Language The Relational Database Standard: Data Definition, Constraints and Schema Changes in SQL, Types of SQL Commands, SQL Operators and their Procedure, Insert, Delete, and Update Statements in SQL Queries and Sub Queries, Aggregate Functions, Joins, Unions, Intersection, Minus, Views (Virtual Tables) in SQL. Functional Dependencies and Normalization for Relational Databases: Informal Design Guidelines for Relation Schemas, Functional Dependencies, Armstrong Rules, Closure of Attributes, Normal Forms Based on Primary Keys, General Definitions of Second and Third Normal Forms, Boyce Codd Normal Form.

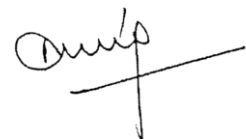


UNIT-V

Transaction Processing: Concurrency Control and Distributed Database Transaction Processing Concepts: Introduction to Transaction Processing, Transaction and System Concepts, Desirable Properties of Transactions, Concurrency Control Techniques, Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering.

Suggested Books:

1. A.K.Majumdar, P. Bhattacharya, "Database Management Systems", TMH, 1996.
2. Bipin Desai, "An Introduction to database systems", Galgotia Publications, 1991

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BACHELOR OF COMPUTER APPLICATION (B.C.A.)

DETAILED SYLLABUS

SECOND SEMESTER

PAPERCODE: C-203

Data Structure Using 'C'

UNIT-I

Classification of Data Structure, Operations on Data Structure, Address Calculation, Application of arrays, Limitation of Array, Application of Arrays, Array as Parameters, Sparse Matrices

UNIT-II

Continuous Implementation (Stack): Array Representation, Operations on Stacks: Push & Pop, Applications of stack, Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack Recursion: Recursive Definition and Processes, Principles of Recursion, Tower of Hanoi Problem, Recursion Vs. Iteration Continuous. Implementation (Queue): Array representation and implementation of Queues, Operations on Queue: Create, Add, Delete, Full and Empty Queue, Circular Queue, Dequeue and Priority Queue

UNIT-III

Non Continuous Implementation: Link Lists: Linear List concept, Linked List Terminology, Representation of Linked List in Memory, Types of Linked List, Single Linked List, Doubly Linked List, Single Circular Linked list, Circular Doubly Linked List, Operations on Link List: Create List Insert node (empty list ,beginning ,middle, end),Delete node(first, general case), Traversing node, Searching node, Print list, Count Nodes, Sort Lists

UNIT-IV:

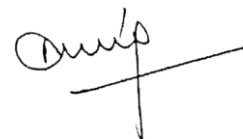
Trees: Introduction to Tree & its Terminology, Binary trees, Types of Binary trees, Representation of Binary Tree, Traversals (Inorder, Preorder, Postorder), Tree Expression, Binary Search Tree, Insertion and Deletion in BST.

UNIT-V:

Sorting & Searching Techniques: Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Sequential Search, Binary Search

Suggested Readings:

1. S. Lipschutz, "Data structures", Mc, Graw, Hill International Editions, 1986.
2. A. Michael Berman, "Data Structures via C++", Oxford University Press, 2002.
3. M. Weiss, "Data Structures and Algorithm Analysis in C++", Pearson Education



BACHELOR OF COMPUTER APPLICATION (B.C.A.)

DETAILED SYLLABUS

SECOND SEMESTER

PAPER CODE: C-204

Principles of Management

UNIT-I

Nature of Management: Meaning, Definition, it's nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management, Administration, Organization, Evolution of Management.

UNIT-II

Functions of Management: Planning - Meaning - Need & Importance, type's levels, advantages & limitations. Forecasting - Need & Techniques Decision making – Types, Process of rational decision making & techniques of decision making Organizing.

UNIT-III

Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties in delegation - Decentralization Staffing - Meaning & Importance Direction, Nature, Principles Communication, Types & Importance Motivation, Importance, theories, Leadership - Meaning - styles, qualities & functions of leaders

UNIT-IV

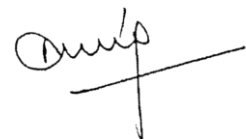
Functions of Management: Controlling - Need, Nature, importance, Process & Techniques Coordination - Need – Importance, Strategic Management Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits Strategic Management in India.

UNIT-V

Recent Trends in Management: Social Responsibility of Management – environment friendly management, Management of Change Management of Crisis Total Quality Management Stress Management International Management

Suggested Books:

1. Essential of Management - Horold Koontz and IteinzWeibrich– McGrawhills International
2. Management Theory & Practice - J.N.Chandan
3. Essential of Business Administration - K.Aswathapa Himalaya Publishing House



BACHELOR OF COMPUTER APPLICATION (B.C.A.)
DETAILED SYLLABUS
SECOND SEMESTER
PAPER CODE: C-205
Numerical Methods

UNIT-I

Roots of Equations: Bisections Method, False Position Method, Newton's Raphson Method, Rate of convergence of Newton's method.

UNIT-II

Interpolation and Extrapolation :Finite Differences, The operator E-Newton's Forward and Backward Differences, Newton's dividend differences formula, Lagrange's Interpolation formula for unequal Intervals, Gauss's Interpolation formula, Starling formula, Bessel's formula, Laplace, Everett formula.

UNIT-III

Numerical Differentiation Numerical Integration :Introduction, direct methods, maxima and minima of a tabulated function, General Quadratic formula, Trapezoidal rule, Simpson's One third rule, Simpson's three, eight rule.

UNIT-IV

Solution of Linear Equation: Gauss's Elimination method and Gauss's Siedel iterative method.

UNIT-V

Solution of Differential Equations: Euler's method, Picard's method, Fourth-order Ranga Kutta method.

Suggested Books:

1. Scarbourogh, "Numerical Analysis".
2. Gupta & Bose S.C. "Introduction to Numerical Analysis, "Academic Press, Kolkata, 3.
S.S.Shashtri, "Numerical Analysis", PHI

