B.Sc.(Computer Science)
M.G. KASHI VIDYAPITH, VARANASI
Three Years Degree Course Syllabus for

Computer Science

(BASED ON UNIFORM SYLLABUS FOR U.P. STATE UNIVERSITIES)

Course Content & Marks Distribution

B.Sc-I Year (CS)

S.No.	P/Code	Paper Name	Theory	Total
1.	**Paper -I**	Computer Fundamental	50	200
2.	**Paper -II**	Programming IN C	50	
3.	**Paper -III**	PC Software	50	
4.	**Practical Content**	PC Software Based, DOS, Windows & Programming IN C,	50	

B.Sc-II Year (CS)

S.No.	P/Code	Paper Name	Theory	Total
1.	**Paper -I**	Operating System	50	200
2.	**Paper -II**	C++ and Object Oriented Programming	50	
3.	**Paper -III**	Data Structure Using C	50	
4.	**Practical Content**	C++ & Data Structure Using C	50	

B.Sc-III Year (CS)

S.No.	P/Code	Paper Name	Theory	Total
1.	**Paper -I**	Visual Basic and Introduction to Web-Designing.	75	300
2.	**Paper -II**	Computer Architecture & Data Communication	75	
3.	**Paper -III**	Introduction To DBMS—SQL & Software Engineering Concept	75	
4.	**Practical Content**	VB, DBMS, HTML & Microprocessor	75	

B.Sc.(Computer Science)

B.Sc. –I Year

Paper-I **MM-50**

Computer Fundamentals

UNIT-I

Introduction to Computers:
Evolution of Computers, Generation of Computers, Classification of Computers Analog Digital and Hybrid Computers, Classification of Computers according to size, Super Computers, Mainframe Computers, Personal Computers (Different Types) and Terminals (Different Types), Characteristics of Computers, Block Diagram of a Digital Computer, types of OS.

Input / Output Devices:
Input Devices-Keyboard, Mouse, Output Devices – VDU, Printers. Internet, Multimedia, Computer viruses

Introduction to Programming Concepts:
Types of Programming Languages, software, Classification of software, Application software and System Software, Structured Programming, Algorithms and Flowcharts with Examples.

UNIT-II

Introduction to Number system and codes:
Different number systems and their conversions (Decimal, Binary, Octal , and Hexadecimal), 1's Complement and 2's complement, Floating Point numbers, Coding – BCD, Gray, ASCII

Boolean algebra and Gate networks:
Fundamental concepts of Boolean algebra, Inverter gates, AND gate, OR gate, NAND gate, NOR gate, X-OR gate, X-NOR gate, The universal property of NAND gate and NOR gate, Basic laws of Boolean algebra, De Morgan's theorems, Simplification of Boolean expression, Karnaugh map (SOP)

UNIT-III

Combinational circuit & Sequential circuit:
Adders (Half and Full), Decoder, Encoder, Multiplexer, De-multiplexer (Introductory Concepts only).**Flip-Flops -** Flip-flops (SR flip-flops, D flip-flops, JK flip-flops), Edge – Triggered flip-flops and Master Slave flip-flops,

Introduction to Registers and Counters:
Buffer register, Multivibrators – Astable , Monostable, Bistable.

Memory:
Memory Heirarchy, Primary Memory-Volatile and non-valatile memory, RAM and ROM, EPROM and EEPROM, Secondary Memory-Floppy Disk and Hard Disk.

UNIT-IV

Disk Operating System:
Introduction to DOS Commands. Types of DOS Commands Wild Card Character in DOS Directory Related Commands. File Related Commands and Utilities. Filfers & Redirection, Batch file.

Introduction of Windows, Features, Application:
MS Windows, and its various elements of application windows title bar, menu bar, maximize and close buttons, borders and corners, scroll bars, windows icon, folder icons, dialog box and its items, starting Microsoft windows, searching the files, copying the files, disk clean up, deleting unnecessary files, Determining Free space on disk, disk defragmenter, sound recorder, using scan disk, imaging, character map, calculator notepad paint, Word Pad.

B.Sc.(Computer Science)

B.Sc. –I Year

Paper-II **MM-50**

Programming in C

UNIT-I

Introduction to C:
History of C, Structure of a C program. The C character set, Constants, Variables and keywords, Data type. Types of constants and variables. Type declaration and arithmetic instructions, Integer and float conversions. Type conversion in assignment, Operators in C, Hierarchy of operators, control instructions, Input-Output statements in C (Formatted and Unformatted)

UNIT-II

Control Structures:
Decision control structures, Logical operators, conditional operator and relational operators.Loop control structures – while, do-while, for loop, Break statement, Continue statement, switch-case control structure, goto statement
Bitwise operators Bitwise AND, OR, exclusive OR, compliment, right shift and left shift operators

UNIT-III

Arrays:
One dimensional and multidimensional array, declaration, initialization and array Manipulations, sorting (Bubble sort) Strings – Basic Concepts, Library Functions.

Functions:
Definition, function definition and prototyping, types of functions, type of arguments, Recursion, passing arrays to functions, storage class in C-automatic, register, external and static variables.

UNIT-IV

Pointers:
Definition, notation, pointers and arrays, array of pointers and functions – call by value and Call by reference, Pointers to pointers. Definition, declaration, accessing structure elements, Array of structure in a structure, Pointers and structures, Unions – definition, declaration, accessing union elements, typedef, Enum Bit fields.
Types of C preprocessor directives, Macros, data file handling, file opening modes, Text and Binary files.

B.Sc.(Computer Science)

B.Sc. –I Year

Paper-III **MM-50**

PC Software

UNIT-I

MS Word: Introduction, Menus, Toolbars, Creating, Saving, Inserting files, Formatting, Editing Text, Find and Replace, Header and Footer, Working with text boxes, columns, pictures, charts and graph, Tables, Equations, WordArt, Printing, Mail Merge. Import and Export files, spelling and grammar checking, Thesaurus, Creating Bookmark and Hyperlinks.

UNIT-II

MS PowerPoint: Introduction, Creation of Presentation, Built-in-wizard, Working with Text, list, color and transitions. Header and Footer, Drawing tools, Animation and sound, Importing Objects from other applications.

UNIT-III

MS Excel: Introduction, An overview of worksheet, Creating worksheet and workbook, Opening and saving Workbook and exiting Excel, Formatting, Protecting Cells, Producing Charts, Macros, Database, Using Tables, Using files with other Programme. Goal seek, scenario, Pivot table, different functions (Antiemetic / String / Date and Time function etc.)

UNIT-IV

MS Access: Introduction, Understanding Databases, Create Tables and Quires, Forms, Finding information in a Database, Create Report, Adding Graph.

B.Sc.(Computer Science)

B.Sc-II Year

Paper-I **MM-50**

Operating System

UNIT-I

Definition of operating system (OS), History of OS, Simple Batch Systems, Multi-programmed Batched Systems, Tim-Sharing Systems, Personal Computer system, Distributed Systems and Real-Time Systems, Operating System Structures-Command Interpreter System, Operating System Services, System Calls, System Programs.

Process Management:
Process Concept, Process control Block, process Scheduling, CPU scheduling-Basic Concepts.

UNIT-II

Storage Management:
Basic Concepts, Logical and Physical Address Space, Swapping, Contiguous Allocation, Paging Segmentation, Virtual Memory- Demand Paging, Paging Replacement, Thrashing and Demand Segmentation.

File System:
File Concept, Access Methods, Directory Structure, Protection, File System Structure. Allocation methods, Free Space Management.

UNIT-III

CPU scheduling, Scheduling Criteria, Round Robin Scheduling, Real Time Scheduling

UNIT-IV

Definition Deadlock, Deadlock Characterizations, method for Handling Deadlocks, Deadlock prevention, Avoidance, Detection, recovery from Deadlock.

B.Sc.(Computer Science)

B.Sc-II Year

Paper-II **MM-50**

C++ and Object Oriented programming

UNIT-I

OOP concept, Procedural vs OOP programming, OOP terminology and features, Tokens, Character set, Keywords, Data-types, Data Types declarations, Constants and variables, expressions, Standard Library and header files. Operator and Expressions: Arithmetic Operator, Increment/Decrement Operator, Relational Operator, Logical Operator and conditional operators, library functions, Logical Expressions, C++ shorthand,

UNIT-II

Flow of control statements: Selection statements, Iteration statement, Jump statement, Construction of loops and implementation, While, Do-while, For statements nested loops. If-else, switch, break, continue and Go to statements.

Classes and Objects: Need for Classes, Declaration of Classes, referencing class Members, Scope of class and its members Nested Classes, Functions in a class: Inline Functions, Constant Member functions, Nesting of Member Functions, friend function, Memory allocation of objects, Arrays of objects, Static Class Member

UNIT-III

Functions, function definition, Default arguments, Constant arguments, Call by value, Call by reference, returning from a function, storage class specifier and variables, storage class specifier and Functions automatic, external and static variables, Pointer: Declarations, Passing to a function, Operations on Pointers

UNIT-IV

Arrays two dimensional and multidimensional arrays, Arrays of Pointers, Pointers and functions, Constructors and Destructor: Declaration, Definition and characteristics, Function Overloading, Inheritance: Need, Different forms, Single Inheritance, Multilevel Inheritance, C++ Memory Map: Dynamic and Static Allocation of Memory, Stacks Queues and Linked Lists, Declarations, File handling: Open, Close, Create, Process, Detecting EOF.

B.Sc.(Computer Science)

B.Sc-II Year

Paper-III **MM-50**

Data Structure Using C

UNIT-I

Structure, definition, and application, Lists, Basic Terminology, Static Implementation of Lists, Pointer Implementation of Lists, Insertion in a List, Deletion from a List, Storage of Sparse, Arrays using Linked List, Doubly Linked Lists, Circular Linked List

UNIT-II

Defining Stack and Queue, Stack Operations and Implementation, Array Implementation, Pointer Implementation, Stack Applications, Convert Number Bases by Using Stacks, Infix to Postfix Conversion, Queues: Operations and Implementation, Queue Application, Priority Queues

UNIT-III

Defining Graph, Basic Terminology, Graph Representation, Graph Traversal, Depth First Search (DFS), Breadth First Search (BFS), Shortest Path Problem, Minimal Spanning Tree, Binary Trees, In order Traversal, Post order Traversal, Preorder Traversal, Binary Search Trees, Operations on a BST, Insertion in Binary Search Tree, Deletion of a node in BST, Search for a key in BST, Height Balanced Tree.

UNIT-IV

Searching and Sorting techniques, Sequential Search, Binary Search, Internal Sort, Insertion Sort, Bubble Sort, Quick Sort, 2-way Merge Sort, Heap Sort

B.Sc.(Computer Science)

B.Sc. –III Year

Paper-I **MM-75**

Visual Basic and Introduction to Web-Designing.

UNIT-I

Basics of Visual Basic Language, Requirements for VB 6.0, Toolbars, Menu Bars-File, Edit, View, Project, format, Tools, Add-Ins menu, Project Explorer, properties Window, Code, form, Debug Windows, Immediate Debug Window, Local Debug Window, Watch Debug Window, Toolbox Window, Adding/Removing Custom Control to Toolbox,

Creating and saving a Project, visual Development and event Driven Programming, OOPS, Object and Classes, Properties Methods and Events.

UNIT-II

Operating, Control Flow Statements, Decision Making Statements, Select Case Statement, Iterations For Loop Structure, Do-loop Structure, Do-Loops Do-Until Loops, Do…While, While….Wend, With…End With Statements, Array : Accessing Array elements, Double Dimensional or Multidimensional Arrays, Dynamic Arrays, Redimensioning an Array, Lbound and Ubound statements Option Base Statement, Collections, Interacting with the basic Controls, Forms, Form Collection, Controlling one form within another MDI form, command Buttons, Label Control, Text Box Control, Capturing the Key Strokes, List Box Controls, Combo Box Controls, Lab Assignments, more Controls : Radio Buttons, Scrollbars, Example program timer Control, Running Lights Application, Image Control, Drive List Box, Searching a drive the directory list box, file Box copying a file, Deleting a File, Renaming a File, Moving a File, Lab Assignments.

UNIT-III

Creating Menu Based Applications: Menus and the Menu Editor, Designing Menus, programming Menu Commands, Manipulating Menus at runtime, Creating a Menu's Control Array, Types of Dialog Boxes (Commond Custom Predefined dialog Box), Procedures and functions: Introduction to procedure types, procedures: Sub. Procedure, General procedures, Event Procedures, Function procedures, Creating new procedures, Selecting existing procedures, Calling sub procedures, Calling Function Procedures, Calling procedures in other modules, passing arguments to procedures, passing arguments by value, Passing arguments by Reference, Using Optional Arguments, Using an Indefinite number of arguments.

UNIT-IV

HTML tags and VB Script

<HTML>, <HEAD>,<BODY>, Paragraphing, line Break tag, Bullet and Numbering tag, Text formatting tags,(Bold, Italic, Underline, strike through, subscript, superscript) Marquee tag, Hyperlink tag, Inserting Back ground image, Horizontal Rule, Changing the Background and fore ground color, Creating table, merging cells, splitter cells, Inhering Colum heading table caption etc. VB script, variable and constant declaration, Output function decision making statement, **Looping control statement etc.**

B.Sc.(Computer Science)

B.Sc. –III Year

Paper-II **MM-75**

Computer Architecture & Data Communication

UNIT-I

Introduction to Microprocessor: Evolution of microprocessor, Embedded microprocessor, Bit-Slic Processors RISC and CISC Processor, Vector Processor Array processor.

Intel 8086 Microprocessor: Pin description of Intel 8085, operating model of 8085, Register organization of 8085, Bus Interface and Execution Unit (BIU and EU), Interrupts 8085 Read and write Bus Cycle.

UNIT-II

8086 Instruction Group: Data transfer Instruction , Arithmetic Instruction, Logical Instruction processor Control Instructing, string Instructions, Interrupts instructions, Addressing modes of 8086 up, Assembly Language Programming.

UNIT-III

Synchronous Data Transfer, Asynchronous Data Transfer, Interrupt Driven Data Transfer DMA Controller Address space partitioning – Memory mapped I/O scheme, I/O mapped I/O scheme.

UNIT-IV

Data Communication, Types of Transmission media.
Topology-Mesh, Star, tree, Bus, Ring, Hybrid.
Transmission mode-Simplex, Half Duplex Full Duplex
Categories of Networks-LAN,MAN,WAN the OSI model, Functions of the Layer- Physical Layer, Data Link Layer, Network Layer, Transport Layer session Layer, Presentation Layer, Application layer.

B.Sc.(Computer Science)

B.Sc. –III Year

Paper-III **MM-75**

Introduction To DBMS—SQL & Software Engineering Concept

UNIT-I

Data, Information and Knowledge, Introducing Databases and Different kinds of database users, Concept Of A Database, Interacting With A Database, Architecture Of A Database, Using Relational Databases, Basics Of Relational Databases, Using Relational Databases, Identifiers For Relations, characteristics of database, database system concepts and Data Independence, Content of Data Dictionary, Data administration function, DBMS, Concurrency control, Database security, Database recovery

UNIT-II

Traditional Data Model – ANSI/SPRC 3-level Architecture, Overview of three Traditional models—Hierarchical, Network and Relational Models, Comparison of these models

File organization technique—Random file organization technique, Multi key file organization technique, Entity relationship Model, ER Model

Structured Query Language- Introduction, Data definition, views and queries in SQL, Specifying constraints and indexes in SQL, Data Manipulation, Data maintenance, Multiple Table Operations, Transaction integrity facilities,

UNIT-III

Why Software Engineering? Software processes-Software Process model (water Fall model, iterative, spiral model) Software Requirements: Functional and non-functional requirements user requirements, system requirements Software requirement document, DFD, Pert Chart ER Diagram.

UNIT-IV

Software Testing –System testing Component testing, test case design test automation. Software Cast Estimation-Software productivity, Estimation technique, Algorithmic Cost modeling project duration and staffing.

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Three Years Degree Course Syllabus for

B.Sc (COMPUTER APPLICATION)

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B.Sc. - I Year

S. No.	Paper	Paper Name	Marks	Total
1.	I	Computer Fundamentals and Internet	50	200
2.	II	Data Communication	50	
3.	III	Programming in C	50	
4.	Practical	Elaborative MS Office and C programming	50	

B.Sc. - II Year

S. No.	Paper	Paper Name	Marks	Total
1.	I	System Analysis and Development	50	200
2.	II	DBMS and RDBMS	50	
3.	III	Object Oriented Programming with C++	50	
4.	Practical	SQL, PL/SQL and C++ Programming	50	

B.Sc. - III Year

S. No.	Paper	Paper Name	Marks	Total
1.	I	Java Programming	75	300
2.	II	Advanced Topics in Computer	75	
3.	Project Report	Project Report- Java, Visual Basic, Web Technology and Oracle	75	
4.	Practical	Java and Oracle	75	

SYLLABUS

B.Sc.-I (COMPUTER APPLICATION)

PAPER- I
Computer Fundamentals and Internet

UNIT- I

Introduction to Computer and Problem Solving-Information and Data

Hardware-CPU, Primary and Secondary storage, I/O devices, Bus structure, Computer Peripherals- VDU, Keyboard, Mouse, Printer.

Software and Types of Software, Programming Languages- Machine Language, Assembly Language, High Level Language, Object Oriented Language.

Problem Solving- Algorithm, Flow charts, Decision tables & Pseudo codes.

UNIT-II

Number systems and Codes- Number representation- weighted codes, Non-weighted codes, Position, Binary, Octal, Hexadecimal, Binary Coded Decimal (BCD), Conversion of bases, Complement notations, Binary Arithmetic, Binary Codes- Gray, Alphanumeric, ASCII.

UNIT-III

Microprocessor- Architecture of 8-bit and 16-bit microprocessor, Machine language instructions, Addressing Modes, Instruction formats, Instruction sets, Instruction cycle, Clock cycles, Timing diagrams, Interrupts, Bus standards and Interfacing concepts.

Boolean algebra- Fundamentals of Boolean algebra, Switches and inverters, Functionally Complete Gates (AND, OR, NOT), NAND, NOR, switching function and Boolean function, De Morgan's Theorem, Application of Boolean Algebra, Algebraic & K-map .

UNIT-IV

Internet- Introduction to networks and internet, history, working of Internet, Modes of connecting to internet, ISPs, Internet address, standard address, domain name, Modems .

World Wide Web- Introduction, Miscellaneous Web Browsers details, searching the www-Directories search engines and meta search engines, search fundamentals, search engines, working of the search engines, Telnet and FTP.

SUGGESTED BOOKS

1. Computer Organization & Architecture –Designing & Performance, William Stallings, Prentice Hall of India.
2. Alfred Glkossbrenner- Internet 101 Computing MGH, 1996
3. Microprocessor Architecture and Programming and Applications with the 8085, R.S.Gaonkar, PRI

SYLLABUS

B.Sc.-I (COMPUTER APPLICATION)

PAPER- II
Data Communication

UNIT-I

Introduction, Data communications, Components, Data representation(ASCII, ISO etc.), Direction of data flow(Simplex, Half duplex, Full duplex), Networks-Distributed Processing, Network Criteria, Physical structure(type of connection, topology), Types of network.

UNIT-II

Analog & Digital Transmission, Modulation, Need for Modulation, Modulation Techniques. Transmission media- Twisted pair cable, coaxial cable, fiber optic cable, Microwave and Satellite Communication. Switching and Switching Techniques.

UNIT-III

Reference Models- OSI and TCP/IP Reference Models. Network Devices- Repeaters, Hubs, Bridges, Switches, Router, Gateway. Multiplexing- TDM, FDM, CDM.

UNIT-IV

Modern Topics-ISDN services & ATM, Wireless LAN-IEE 802.11, Bluetooth, Cellular Mobile Systems, Difference between wireless and fixed telephone networks.

SUGGESTED BOOKS

1. B.A. Forouzan- Data Communications and networking (3rd Ed.)-TMH
2. W. Stallings- Data Computer Communications (5th Ed.)- PHI
3. Wireless Communications: Theodore S. Rappaport, Pearsons

SYLLABUS

B.Sc.-I (COMPUTER APPLICATION)

PAPER- III

C Programming & Data Structure

UNIT - I

C Fundamentals- Character set, Identifiers and keywords, Data Types, Constants, Variables and Arrays, Declarations, Operators & Expressions, Library functions, Statements, Symbolic Constants, Preprocessor directives

Data Input and Output- getchar(), putchar(), scanf(), printf(), gets(), puts() functions
Control Statements- if-else, while, do-while, goto , for statements, nested control structures, switch, break, continue statements, comma operator.

UNIT - II

Functions- Function prototypes, Passing arguments to a function by value, Recursion, Storage classes, Automatic, External, Static, Register variables in single file environment
Arrays- Definition, Processing arrays, Passing arrays to functions, Introduction to multidimensional arrays, arrays and strings

Pointers- declaration, referencing and de-referencing, passing pointers to functions, pointer to arrays, operations of files using pointers
Structures and Unions.

UNIT - III

Data Structure- Definition and abstract data types, Stacks- definition, Array based implementation of stacks, Linked list, infix, prefix, postfix representation, Conversions, Applications. Queues , Dqueues and its implementation using C, Trees: Definition of trees and Binary trees : Properties ,Implementation ,Traversal pre-order ,post order ,In-order traversal.
Graphs & Sorting Algorithms - Graphs- Definition of Undirected and Directed graphs Graph Traversal – Breadth first Traversal, Depth First Traversal, Array based implementation using C.

UNIT- IV

Sorting Algorithm- Introduction of Sorting, Sorting by Exchange, Selection, Insertion- Bubble sort, selection sort, Efficiency of above algorithms Merge sort and algorithms, Quick sort algorithm.

SUGGESTED BOOKS

1. Programming in C by Schaum Series
2. Let Us C by Yashwant Kanetkar BPB
3. Data Structure Using C by A.M , LPE
4. Data Structure and Program by Jr. Seymour Lipschultz , Schaum's outline by TMH

SYLLABUS

B.Sc.-II (COMPUTER APPLICATION)

PAPER- I
System Analysis and Development

UNIT- I

a) System Concepts and Information System Environment: Introduction, The system Concept, Definition, Characteristics of system, Types of system- Physical or Abstract System, Elements of a system, System Models.

b) System Development Life Cycle- Introduction, SDLC- Recognition of need, Feasibility Study, Analysis , Design, Implementation, Post –Implementation and Maintenance.

c) The Role of Analyst- Introduction, Definition, Historical Perspective, Academic and Personal Qualification, Multifaceted role of analyst - change Agent, Investigator, Monitor, Architect, and Psychologist.

UNIT- II

a) System Planning and Initial Investigation - Introduction, Base for planning, Dimension of Planning, Initial Investigation, Need of Investigation, determination of feasibility.

b) Information Gathering : Introduction ,What kind of information Needed ,Where does information originate ?Tools for information gathering

c) Tools for Structured Analysis- DFD, Data Dictionary, Decision Tree and structured English, Decision Tables Pros and cons of each tool.

UNIT- III

a) Process of Design- Logical and Physical Design, Design Methodologies, Form –Driven Methodology-: The IPO charts, Forms, Classification of Forms, Requirements of from Design .Types of Forms.

b) System Testing & Quality Assurance- What is Testing? Why Testing? ,Nature of Test Data , The Test Plan :Activity, Network for system testing ,System testing, Unit , Integration , Alpha , Beta , White-box and Black Box testing . Levels of Quality Assurance, Role of Data Auditor, Verification and Validation.

UNIT- IV

Security, Disaster / Recovery and Ethics in System Development –Introduction, System Security- Definitions, Threats to system Security, Control Measures, Disaster/Recovery. Ethics codes and standard of Behavior.

SUGGESTED BOOKS

1. System Analysis and Design by Elias M. Awad.
2. Software Engineering by Pressmen.

SYLLABUS

B.Sc.-II (COMPUTER APPLICATION)

PAPER- II
DBMS

UNIT-I

Introduction to databases-Database and its Hierarchies, History of Databases, Types of DBMS, Data Environment –Database and DBMS software, Database Architecture, Three layered Architectural /O Functions, Characteristics of database approach.

Relational Model – Logic Data models, Relational Data Model, Querying Relational Data Model, Relational Algebra, and Relational Calculus.

UNIT – II

SQL – SQL Language, SQL Database object, SQL Data Types, DDL, DML, and DCL commands, Deleting data, Retrieving Data, Insertion of Data, Updating Data , Integrity constraint ,Keys, Creating and altering tables ,Views, Sequence, Index.

UNIT – III

a) E-R Modeling, Normalization-Database Design, Entity ,Attributes, and Entity sets, Relationship and Relation sets, ER Diagram, Features of ER Diagram, Conceptual Database Design with ER model, Anomalies in Database, Redundancy, Inconsistency, Update Anomalies, Good Database Designing.
b) Database Security – Access Control , Discretionary Access Control, Mandatory Access Control, Additional Issues to Security. File Organization – Sequential ,Direct ,Index Sequential Files Hashing , B-Trees.

UNIT – IV

Data warehousing Definition, usage, trends. DBMS vs Data Warehouse ,Data marts , Metadata Multidimensional Data Mode , Data Cubes, Schemas for Multidimensional Database- Star, snowflakes, and fact constellation, Datawarehouse process & architecture, OLTP vs OLAP, ROLAP vs MOLAP, types of OLAP, 3-tier Data warehouse architecture, Distributed and Virtual Data warehouses, Data warehouse manager, Data warehouse implementation.

Data mining- Definition & Task, KDD vs Data mining, Data mining techniques-Association rules, Clustering techniques, Decision tree, Data mining tools and applications, Data mining query languages.

SUGGESTED BOOKS

1. Database Systems and Concepts, Henry F. Korth
2. DBMS by Date
3. Database Management System by Bipin Desai

SYLLABUS

B.Sc.-II (COMPUTER APPLICATION)

PAPER- III
Object Oriented Programming with C++

UNIT- I
Principals of OOP- Basic Concept of OOP, Benefits of OOP, Object oriented VS Procedural and structured programming, header files, I/O statements, Datatypes- User defined, Basic, Derived Data-types. Access specifier, this operator, Member variable, Member function, Scope resolution operator.

UNIT- II
Control statements, Looping, Array, Array Declaration, Array Initialization, Multidimensional Array.

UNIT- III
Functions in C++ - Call by value, Call by reference, Inline function, Friend function, Function Overloading, Virtual function.
Class and object, Constructors and Destructors: Introduction, Multiple Constructors in a class, Operator Overloading, Inheritance- Introduction, types of Inheritance, Abstract class, Virtual base class, Polymorphism, Data Encapsulation.

UNIT- IV
Working with Files – Introduction, Classes for File Stream Operations, Opening and Closing a File, Detecting End-of File.

SUGGESTED BOOKS

1. Let Us C++ by Yashwant Kanitkar, BPB
2. Object Oriented Programming , Robert Lafore

SYLLABUS

B.Sc.-III (COMPUTER APPLICATION)

PAPER- I
JAVA

UNIT-I

Java programming language overview, Referring to applets and applications, The first step in writing Java application, Basic Java application, Primary application components, Class code block, Data, Method code block, Using semicolon and braces, Compiling and running a program, Requirement for your source file, Compiling, Running the program

UNIT-II

Java Primitive Types and Reference Types- Integral primitive types, Floating point primitive types, Textual primitive types- char, Logical primitive types- Boolean, Variable identifier conventions and rules, using variables in program, how primitives and constants are stored in memory, using a string class as a data type, using string and the new modifier, using string without the new modifier, Using string without using modifier, Value you can assign to string, How string can be stored in memory , Using string reference variables, Using main method.

UNIT-III

Abstract classes and Inheritance, Java2 Platform Class Library packages, Grouping classes in packages, Coding structure, Source file layout , Filenames, Java Methods and Object Interaction, Java Methods, Declaring Methods, Invoking Methods, Types of method, Passing Arguments, Method Overloading , Arithmetic operators, Operators precedence, Increment and decrement operators, The if construct, The While loop, The for loop, while VS for, The do loop, The switch Construct, The break statement, The continue statement , Java keywords.

UNIT- IV

Graphical user interface development, Java AWT Package Class Hierarchy, GUI Project, Frame, Adding a button, Creating panels and complex layout, ActiveX Technologies & Implementation, ActiveX-based architecture, ActiveX controls, ActiveX documents, ActiveX code components, Implementing Client-Side Solutions, Introduction to scripting, Client-side scripting, Implementing ActiveX controls, Implementing Server-side solutions, Introducing Server-side scripting, Authoring active server pages(ASP), Reading a hypertext transfer protocol(HTTP) request, Creating HTTP response, Saving user information, User ActiveX server components.

SUGGESTED BOOKS

1. The Complete Reference, Herbert Schildt, TMH

SYLLABUS

B.Sc.-III (COMPUTER APPLICATION)

PAPER- II
Advanced Topics in Computer

UNIT-I

Computer Graphics- Introduction, Co-ordinate system, Information handling software, Graphics software, Area of application, translation, rotation, scaling, matrix representation. Homogenous co-ordinate system, composite transformation, inverse transformation, computer art, animation, morphing, projection and clipping, 2D & 3D transformation, lines, curves and their representation

UNIT-II

Basics of multimedia technology, computers, communication & entertainment, multimedia and introduction, frame work for multimedia systems, multimedia devices like CD- Audio, CDROM, CD-I, Presentation devices and the user interface, multimedia presentation and authoring, professional development tools, LANs and multimedia, internet , WWW and multimedia distribution network- ATM and ADSN, Multimedia servers and databases, vector graphics, video on demand

UNIT-III

Artificial Intelligence- Introduction to AI, Knowledge base system, Properties of AI, Software of AI, Organization working for AI, Fuzzy logic base machines, Work of cell and their classification.

Data Encryption- Coding and Decoding techniques, First stage and second stage decoding, standard for data encryption.

Image Processing- Introduction, Digital Image Processing, Various Phases of Image Processing.

UNIT-IV

Operating System- Introduction, OS concepts, Types of OS, OS Structure, System calls and Types, Processes- Introduction to process, Inter-process Communication, Process Scheduling,

Memory Management- Introduction, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management- Demand Paging, Page Replacement, Deadlock- Prevention, Avoidance, Detection, Recovery, Algorithms

SUGGESTED BOOKS

1. Operating System Principles , Arbraham Silberschatz & Peter Baer Galvin
2. Digital Image Processing & Analysis, B. Chandra, D. Dutta Majumdar