

Department of Computer Science,
University of Lucknow
Proposed Syllabus
B.Sc.(Computer Science)
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	

Sumar

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B.Sc.(Computer Science)
B.Sc. -I Year

MM-50

Paper-I

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, Biastable.

Memory:

Memory Hierarchy, Primary Memory-Volatile and non-volatile 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 Relate 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 button borders and corners, scroll bars, windows icon, folder icons, dialog box and its items, starting Microsoft window searching the files, copying the files, disk clean up, deleting unnecessary files, Determining Free space on disk, di defragmenter, sound recorder, using scan disk, imaging, character map, calculator notepad paint, Word Pad.

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Paper-II

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.

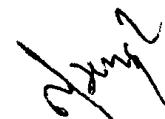
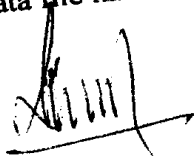
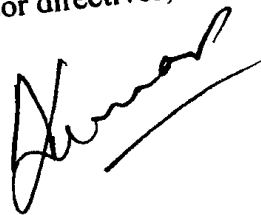
Functions:

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.



Department of Computer Science,
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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 Cost Estimation-Software productivity, Estimation technique, Algorithmic Cost modeling project duration and staffing.

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Paper-II

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Programming IN C

UNIT-I

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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 as 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.

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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.

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Paper-II

C++ and Object Oriented programming

MM-5

UNIT-I

OOP concept, Procedural vs OOP programming, OOP terminology and features, Tokens, Character Keywords, Data-types, Data Types declarations, Constants and variables, expressions, Standard Library header files. Operator and Expressions: Arithmetic Operator, Increment/Decrement Operator, Relatio 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 loc and implementation, While, Do-while, For statements nested loops. If-else, switch, break, continue and to statements.

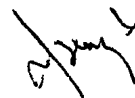
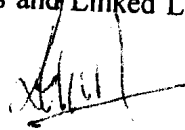
Classes and Objects: Need for Classes, Declaration of Classes, referencing class Members, Scope of cl: and its members Nested Classes, Functions in a class: Inline Functions, Constant Member functions, Nesti of Member Functions, friend function, Memory allocation of objects, Arrays of objects, Static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

UNIT-III

Functions, function definition, Default arguments, Constant arguments, Call by value, Call by referenc returning from a function, storage class specifier and variables, storage class specifier and Functio 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 function Constructors and Destructor: Declaration, Definition and characteristics, Function Overloading, Inheritanc Need, Different forms, Single Inheritance, Multilevel Inheritance, C++ Memory Map: Dynamic and Stat Allocation of Memory, Stacks Queues and Linked Lists, Declarations, File handling: Open, Close, Creat Process, Detecting EOF.



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Paper-I

Operating System

UNIT-I

Definition of operating system (OS), History of OS, Simple Batch Systems, Multi-programmed Batched Systems, Time-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:

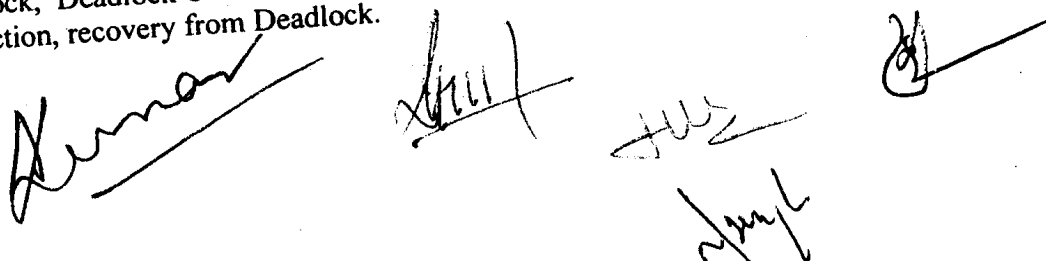
File Concept, Access Methods, Directory Structure, Protection, File System Structure. Allocation methods, Free Space Management.

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.



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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

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