

Lesson Plan (Even Semester)

Indira Gandhi National College, Ladwa

Name of Faculty: Rajbir

Class: B.A./B.Sc- I (2nd Sem.)

Subject: Computer

Paper: Programming in C / Logical Organization of computer

Session: 2020-21

Duration: 16 weeks

Time	Contents covered
Week-1	Overview of C: History & Importance of C, Structure of a C Program. Elements of C: C character set, identifiers and keywords Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floatingpoint representation of numbers,
Week-2	Data types, Constants and Variables, Assignment statement, Symbolic constant. BCD Codes,
Week-3	Input/output: Unformatted & formatted I/O function, Input functions (scanf(), getch(), getche(), getchar(), gets()), Error detecting and correcting codes,
Week-4	output functions (printf(), putchar(), puts()). Character Representation – ASCII, EBCDIC.
Week-5	Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and
Week-6	Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity. Truth Tables, Canonical and Standard forms of Boolean functions
Week-7	Decision making & branching: Decision making with IF statement, IF-ELSE statement Programming examples. , Simplification of Boolean Functions – Venn Diagram,
Week-8	Nested IF statement, ELSE-IF ladder, switch statement, goto statement Programming examples. Karnaugh Maps.
Week-9	Decision making & looping: For, while, and do-while loop, Programming examples. Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc.
Week-10	Jumps in loops, break, continue statement. Combinational Circuits: Half-Adder, Full-Adder, Half- Subtractor, Full-Subtractor, Encoders, Decoders,
Week-11	Functions: Definition, prototype, Multiplexers, Demultiplexers, Comparators
Week-12	Passing parameters, recursion. Programming examples. Code Converters.

Week-13	Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. Sequential Logic: Characteristics, Flip-Flops, Clocked RS, D type, JK, T type
Week-14	Arrays: Definition, types, initialization, processing an array. Structure and Union Master- Slave flip-flops. State table, state diagram. Flip-flop excitation tables
Week-15	Arrays: Definition, types, initialization, processing an array. Structure and Union Shift registers : serial in parallel out and parallel in parallel out.. Designing
Week-16	Programming examples. counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters

Lesson Plan (Even Semester)

Indira Gandhi National College, Ladwa

Name of Faculty: Rajbir

Class: B.A./B.Sc- II (4th Sem.)

Subject: Computer

Paper: OOPS with C++ / Operating Systems

Session: 2020-21

Duration: 16 weeks

Time	Contents covered
Week-1	Object oriented Programming: Object-Oriented programming features and benefits. Introduction: operating system, architecture, functions, characteristics, historical evolution, types: Serial batch, multiprogramming, time sharing, real time, distributed and parallel.
Week-2	Object-Oriented features of C++, Class and Objects, Data Hiding & Encapsulation, OS as resource Manager. Computer system structures: I/O structure, storage structure,
Week-3	Structures, Data members and Member functions, Scope resolution operator and its significance, storage hierarchy. Operating system structure: system components, services, system calls
Week-4	Static Data Members, Static member functions, Nested and Local Class, Accessing Members of Class and Structure. system programs, system structures.
Week-5	Constructor, Initialization using constructor, types of constructor. Process management: process concepts, process state, process control block,
Week-6	Default, Parameterized & Copy Constructors, Constructor overloading
Week-7	Default Values to Parameters, Destructors, Console I/O operations, process scheduling, inter process communication. CPU Scheduling: scheduling criteria, levels of scheduling,
Week-8	Hierarchy of Console Stream Classes, Unformatted and Formatted I/O Operations. scheduling algorithms, multiple processor scheduling. Deadlocks: Characterization, methods of handling, deadlock detection, prevention, avoidance, recovery.
Week-9	Manipulators, Friend Function, Friend Class, Arrays, Array of Objects. Storage Management: memory management of single-user and multiuser operating system,
Week-10	Passing and Returning Objects to Functions, String Handling in C++, Dynamic Memory Management: Pointers, new and delete Operator, Array of Pointers to Objects, this Pointer, Passing Parameters to Functions by Reference & pointers. partitioning, swapping, paging and segmentation,
Week-11	Dynamic Memory Management: Pointers, new and delete Operator, Array of Pointers to Objects, this Pointer. virtual memory, Page replacement Algorithms, Thrashing. Process synchronization
Week-12	Passing Parameters to Functions by Reference & pointers. critical section problems, semaphores. Mutual exclusion
Week-13	Static Polymorphism: Operators in C++, Precedence and Associativity Rules

	Device and file management: Disk scheduling, Disk structure, Disk management.
Week-14	Operator Overloading, Unary & Binary Operators Overloading. File Systems: Functions of the system, File access and allocation methods,
Week-15	Function Overloading, Inline Functions. Directory Systems: Structured Organizations.
Week-16	Merits/Demerits of Static Polymorphism. directory and file protection mechanisms.

Lesson Plan (Even Semester)

Indira Gandhi National College, Ladwa

Name of Faculty: Rajbir

Class: B.A./B.Sc- III (6th Sem.)

Subject: Computer

Paper: RDBMS / Computer Networks

Session: 2020-21

Duration: 16 weeks

Time	Contents covered
Week-1	Relational Model Concepts, Codd's Rules for Relational Model. Introduction to Data Communication and Computer Networks; Uses of Computer Networks; Types of Computer Networks and their Topologies;
Week-2	Hierarchical Data Model– Introduction, Features, Components, Example, Network Data Model– Introduction, Features, Components, Example. Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards.
Week-3	Differences between Hierarchical Data Model and Network Data Model Comparison of Relational Data Model with Hierarchical Data Model and Network Data Model. Bridges, Switches, Routers, Gateways; Network Software: Network Design issues and Protocols; Connection-Oriented and Connectionless Services.
Week-4	Relational Algebra:-Selection and Projection, Set Operation, Join and Division OSI Reference Model; TCP/IP Model;
Week-5	Relational Calculus: Tuple Relational Calculus and Domain Relational Calculus. Analog and Digital Communications Concepts: Analog and Digital data and signals; Bandwidth and Data Rate, Capacity, Baud Rate;
Week-6	Functional Dependencies and Normalization -- Purpose, Data Redundancy, Update Anomalies, Partial/Fully Functional Dependencies, Transitive Functional Dependencies, Guided and Wireless Transmission Media; Communication Satellites
Week-7	Characteristics of Functional Dependencies, ; Switching and Multiplexing;
Week-8	Decomposition and Normal Forms (1NF, 2NF, 3NF & BCNF). Modems and modulation techniques;
Week-9	SQL: Data Definition and data types, Create Table, Insert Data, Viewing Data. Data Link Layer Design issues; Error Detection and Correction methods; Sliding Window Protocols: One-bit, Go Back N and Selective Repeat.
Week-10	Filtering Table Data, Sorting data, Creating Table from a Table, Destroy table, Update, View, Delete, Join. Media Access Control: ALOHA, Slotted ALOHA, CSMA, Collision free protocols.
Week-11	Concatenating data from Table Specifying Constraints in SQL; Primary Key, Foreign Key, Unique Key. Introduction to LAN technologies: Ethernet, Switched Ethernet, Fast Ethernet, Gigabit Ethernet; Token Ring.
Week-12	Check Constraint, Using Functions. Introduction to Wireless LANs and Bluetooth
Week-13	PL/SQL-Introduction, Advantages of PL/SQL The Generic PL/SQL Block: PL/SQL Execution Environment. Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing, Hierarchical Routing;

Week-14	PL/SQL Character Set and Data Types, Declaration and Assignment of Variables Control Structure in PL/SQL. Congestion Control; Traffic shaping; Choke packets; Load shedding; Application Layer: Introduction to DNS, E-Mail and WWW services.
Week-15	Conditional Control, Iterative Control, Sequential Control Network Security Issues: Security attacks; Encryption methods;
Week-16	Pl/sql programmes examples. Firewalls; Digital Signatures