Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2025-26) [Odd Semester]

Name of Teacher	NISHA RANI
Department	COMPUTER SCIENCE
Class & Section	BCA 5th SEM
Subject and Code	Network Infrastructure and Data Communication Technologies, B23-CAP-503
Semester Duration	Month of July, August, September, October, November

Topics

Month of July (25 july onward)

Introduction to Data Communication and Computer Networks; Uses of Computer Networks; Types of Computer Networks and their Topologies

Month of August

Computer Networks; Types of Computer Networks and their Topologies; Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways; Network Software: Network Design issues and Protocols; Connection Oriented and Connectionless Services; OSI Reference Model; TCP/IP Model

Month of September

Analog and Digital Communications Concepts: Analog and Digital data and signals; Bandwidth and Data Rate, Capacity, Baud Rate; Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing; Modems and modulation techniques

Month of October

Data Link Layer Design issues; Error Detection and Correction methods; Sliding Window Protocols: One-bit, Go Back N, and Selective Repeat; Media Access Control: ALOHA, Slotted ALOHA, CSMA, Collision free protocols; Introduction to LAN technologies: Ethernet, Switched Ethernet, Fast Ethernet, Gigabit Ethernet; Token Ring; Introduction to Wireless LANs and Bluetooth

Month of November

Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing, Hierarchical Routing; Congestion Control; Traffic shaping; Choke packets; Load shedding; Application Layer: Introduction to DNS, E-Mail, and WWW services; Network Security Issues: Security attacks; Encryption methods; Firewalls; Digital Signatures

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Name of Teacher	NISHA RANI
Department	COMPUTER SCIENCE
Class & Section	BCA 1ST SEM
Subject and Code	Logical Organization of Computer, B23-CAP-103
Semester Duration	Month of July, August, September, October, November

Topics

Month of July(25 July ONWARD)

Number Systems: Binary, Octal, Hexadecimal etc. Conversions from one number system to another, BCD Number

Month of August

BCD Codes: Natural Binary Code, Weighted Code, Self Complimenting Code, Cyclic Code. Error Detecting and Correcting Codes. Character representations: ASCII, EBCDIC and Unicode. Number Representations: Integer numbers - sign-magnitude, 1's & 2's complement representation. Real Numbers normalized floating point representations.

Month of September

Binary Arithmetic: Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division using 1's and 2's Compliment representations, Addition and subtraction with BCD representations. Boolean Algebra: Boolean Algebra Postulates, basic Boolean Theorems, Boolean Expressions, Boolean Functions, Truth Tables, Canonical Representation of Boolean Expressions: SOP and POS, Simplification of Boolean Expressions using Boolean Postulates & Theorems, Kaurnaugh-Maps (upto four variables), Handling Don't Care conditions

Month of October

Logic Gates: Basic Logic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. Their symbols, truth tables and Boolean expressions. Combinational Circuits: Design Procedures, Half Adder, Full Adder, Half Subtractor, Full Subtracor, Multiplexers, Demultiplexers, Decoder, Encoder, Comparators, Code Converters.

Month of November

Sequential Circuits: Basic Flip- Flops and their working. Synchronous and Asynchronous Flip –Flops, Triggering of Flip-Flops, Clocked RS, D Type, JK, T type and Master-Slave Flip-Flops. State Table, State Diagram and State Equations. Flip-flops characteristics & Excitation Tables. Sequential Circuits: Designing registers –Serial-In Serial-Out (SISO), Serial-In Parallel-Out (SIPO), Parallel-In Serial-Out (PISO) Parallel-In Parallel-Out (PIPO) and shift registers

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2025-26) [Odd Semester]

Name of Teacher	NISHA RANI
Department	COMPUTER SCIENCE
Class & Section	BCA 3RD SEM
Subject and Code	Java OOP Foundations, B23-CAP-301
Semester Duration	Month of July, August, September, October, November

Topics

Month of July(25 July ONWARD)

Object Oriented Programming and Java Fundamentals: Structure of Java programs

Month of August

Classes and Objects, Data types, Type Casting, Looping Constructs.

Month of September

Interfaces: Interface basics; Defining, implementing and extending interfaces; Implementing multiple inheritance using interfaces Packages: Basics of packages, Creating and accessing packages, System packages, Creating user defined packages

Month of October

Exception handling using the main keywords of exception handling: try, catch, throw, throws and finally; Nested try, multiple catch statements, creating user defined exceptions. File Handling Byte Stream, Character Stream, File I/O Basics, File Operations.

Month of November

AWT and Event Handling: The AWT class hierarchy, Events, Event sources, Event classes, Event Listeners, Relationship between Event sources and Listeners, Delegation event model, Creating GUI applications using AWT.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2025-26) [Odd Semester]

Name of Teacher	NISHA RANI
Department	COMPUTER SCIENCE
Class & Section	BA AND BSC 5th SEM CS
Subject and Code	Data Structures, B23-CSE-501
Semester Duration	Month of July, August, September, October, November

Topics

Month of July (25 july onward)

Data Structure Definition, Data Type vs. Data Structure, Classification of Data Structures, Data Structure Operations, Applications of Data Structures.

Month of August

Algorithm Specifications: Performance Analysis and Measurement (Time and Space Analysis of Algorithms- Average, Best and Worst Case Analysis). Arrays: Introduction, Linear Arrays, Representation of Linear Array in Memory, Two Dimensional and Multidimensional Arrays, Sparse Matrix and its Representation, Operations on Array: Algorithm for Traversal, Selection, Insertion, Deletion and its implementation.

Month of September

String Handling: Storage of Strings, Operations on Strings viz., Length, Concatenation, Substring, Insertion, Deletion, Replacement, Pattern Matching Linked List: Introduction, Array vs. linked list, Representation of linked lists in Memory, Traversing a Linked List, Insertion, Deletion, Searching into a Linked list, Type of Linked List.

Month of October

Stack: Array Representation of Stack, Linked List Representation of Stack, Algorithms for Push and Pop,

Application of Stack: Polish Notation, Postfix Evaluation Algorithms, Infix to Postfix Conversion, Infix to Prefix Conversion, Recursion. Introduction to Queues: Simple Queue, Double Ended Queue, Circular Queue, Priority Queue, Representation of Queues as Linked List and Array, Applications of Queue. Algorithm on Insertion and Deletion in Simple Queue and Circular Queue. Priority Queues.

Month of November

Tree: Definitions and Concepts, Representation of Binary Tree, Binary Tree Traversal (Inorder, postorder, preorder), Binary Search Trees – Definition, Operations viz., searching, insertions and deletion; Searching and Sorting Techniques, Sorting Techniques: Bubble sort, Merge sort, Selection sort, Quick sort, Insertion Sort. Searching Techniques: Sequential Searching, Binary Searching.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2025-26) [Odd Semester]

Name of Teacher	NISHA RANI
Department	COMPUTER SCIENCE
Class & Section	BA AND BSC 3RD SEM
Subject and Code	SEC DATA MANAGEMENT,B23-SEC-302
Semester Duration	Month of July, August, September, October, November

Topics

Month of July (25 july onward)

Database management system-introduction and purpose, Centralised, client server, parallel, distributed and web basted Architecture

Month of August

data storage structure introduction, induction hashing and data dictionary, Introduction to various data models, cardinality ratio and relationships, representation of entities attributes relationship attribute relationship set journalisation aggregation structure of relational database

Month of September

codes rules and relational data model, Basic system development life cycle, Database design, ER to relational

Month of October

Functional Dependency and Normalization, SQL DDL, DML ,DCL, Data Types and Constraints

Month of November

Queries for retrieval, insertion, deletion, updation, introduction to views