LESSON PLAN

CLASS: - M.Sc. Computer Science

SEMESTER:- 1st Sem

Name : - Manoj Kumar

Subject/Paper: - (Computer Networks) Course Code -24CSC201DS02

S.No.	Week Days	Syllabus
Unit-1	August 2025	Introduction to Computer Network: Types of Networks, Network Topologies, OSI and TCP/IP Reference Models; Data Communications Concepts: Digital Vs. Analog communication; Parallel and Serial Communication; Synchronous, Asynchronous and Isochronous Communication;
		Communication modes: simplex, half duplex, full duplex; Multiplexing; Transmission media: Wired-Twisted pair, Coaxial cable, Optical Fibre, Wireless transmission: Terrestrial, Microwave, Satellite, and Infrared. Unit Test/Class Test
Unit-2	September 2025	Communication Switching Techniques: Circuit Switching, Message Switching, Packet Switching. Data Link Layer Fundamentals: Framing, Basics of Error Detection, Forward Error Correction, Cyclic Redundancy Check codes for Error Detection, Flow Control.
		Media Access Protocols: ALOHA, Carrier Sense Multiple Access (CSMA), CSMA with Collision Detection (CSMA/CD), Token Ring, Token Bus. Unit Test/ Class Test/ 1st Seasonal Exam
Unit-3	October 2025	High-Speed LAN: Standard Ethernet, Fast Ethernet, Gigabit Ethernet, 10G; Wireless LANs: IEEE 802.11, Bluetooth.
		Network Layer: IP Addressing and Routing, Network Layer Protocols: IPv4 (Header Format and Services), ARP, ICMP (Error Reporting and Query message); IPv6 (Header Format and Addressing). Unit/Class test
Unit-4	November 2025	Transport Layer: Process-to-Process Delivery: UDP, TCP; Application Layer: Domain Name System (DNS); SMTP; HTTP; WWW. Network Security: Security Requirements and attacks;
		Cryptography: Symmetric Key (DES, AES), Public Key Cryptography (RSA); Firewall. Unit/Class test/ 2nd Seasonal Exam

LESSON PLAN

CLASS: - M.Sc. (Computer Science) SEMESTER:- 3rd Sem

Name : - Manoj Kumar

Subject/Paper: - Design and Analysis of Algorithms (Course Code- 25CSC03DS01)

S.No.	Week Days	Syllabus
Unit-1	August 2025	Introduction of Algorithms, Analysis of algorithms: Space Complexity, Time Complexity, recurrence relation and Asymptotic Notation Divide and Conquer:
		General Methods, Binary Search, Quick sort, Merge sort, Strassen's matrix multiplication.
Unit-2	September2025	Greedy Strategy: Introduction, examples of greedy method like Huffman coding, Minimum spanning trees, knapsack problem, job sequencing with deadlines, single source shortest path algorithms.
		Graphs, its basic terminologies, representation, traversal algorithms.
Unit-3	October 2025	Dynamic Programming: Introduction, Longest common subsequence, Matrix chain multiplication, FloydWarshall algorithms.
		Backtracking Concept and its example like 8 Queen's problem, Hamiltonian cycle, Graph Colouring problem, Least Cost Search
Unit-4	November 2025	Branch and Bound: General method, applications - travelling sales person problem, 0/1 knapsack problem- LC branch and bound solution, FIFO branch and bound solution.
		NP-Hard and NP-Complete Problems: Basic concepts, Non-Deterministic Algorithms, NP-hard and NPcomplete classes

LESSON PLAN

CLASS: - M.Sc. (Computer Science) SEMESTER:- 3rd Sem

Name : - Manoj Kumar

Subject/Paper: - Computer Graphics (Course Code -25CSC203DS05)

S.No.	Week Days	Syllabus
Unit-1	August 2025	Introduction: History, applications, and scope of computer graphics. Graphics Systems: Working of Raster and vector graphics, working of display devices, input/output devices, and color models (RGB, CMYK, HSV).
		2D Graphics and Picture Construction: 2D Primitives: Line- DDA, Bresenham's, Mid-point method, circle – Cartesian, Polar, Mid-point method. Polygon drawing algorithms.
Unit-2	September 2025	Transformations: Translation, scaling, rotation, reflection, and shearing, composite transformation and coordinate transformations. Window-viewport transformation. Clipping: Line Clipping - Midpoint subdivision, Cohen-Sutherland, Liang-Barsky, NLN.
		Polygon clipping algorithms – Area sub-division method, Sutherland Hodgman. Picture Construction Techniques: Geometric primitives and their representation. Filling Algorithms: boundary fill, flood fill, Scan line filling algorithms, Aliasing problem, anti-aliasing techniques.
Unit-3	October 2025	Interactive Graphics: basic positioning methods, constraints, grids, gravity field, rubber-band methods, dragging, painting and drawing. 3D Primitives: Display methods: Projections: Perspective, Parallel, anomalies associated with projections, depth cueing, visible line and surface rendering, stereoscopic views.
		3D Transformations: Translation, rotation, scaling, and perspective projections. Visible-surface detection methods, back-face detection, Depth-buffer method, A-buffer method, scan line method, depth sorting, and Area-subdivision method.
Unit-4	November 2025	Lighting and Shading: Basic lighting models, Flat shading, Gouraud shading, Phong shading. Introduction to Blender: Interface overview, navigation, and basic modeling tools. Mesh modeling, modifiers, and sculpting techniques.
		Materials, textures, and UV mapping. Keyframing and simple animations in Blender. Basic Animation: Keyframing, interpolation techniques, and introduction to physics-based animation.