Lecture Plan – Computer Networks

Course Code: B23-SEC-301
Course Title: Computer Networks
Semester: III
Subject: Computer Science

S. No.	Lecture No.	Topic	Subtopics
1	L1	Introduction to Data Communication	Uses & Importance of Computer Networks
2	L2	Types of Computer Networks	LAN, MAN, WAN, PAN
3	L3	Network Topologies	Bus, Star, Ring, Mesh, Hybrid
4	L4	Network Hardware Components I	Connectors, Transceivers, Repeaters
5	L5	Network Hardware Components II	Hubs, Switches, Routers, Gateways
6	L6	Network Interface Devices	NIC, PC Cards, Bridges
7	L7	Network Software	Design Issues & Protocols
8	L8	Services in Networking	Connection-Oriented & Connectionless Services
9	L9	OSI Reference Model	Layers & Functions
10	L10	TCP/IP Model	Layers & Functions
11	L11	OSI vs TCP/IP	Comparison & Applications
12	L12	Data & Signal Concepts	Analog vs Digital
13	L13	Transmission Parameters	Bandwidth, Data Rate, Capacity, Baud Rate
14	L14	Guided Transmission Media	Twisted Pair, Coaxial, Fiber Optics
15	L15	Wireless Transmission Media	Radio, Microwave, Infrared
16	L16	Communication Satellites	Concepts & Applications
17	L17	Multiplexing	FDM, TDM, WDM
18	L18	Switching Techniques	Circuit, Packet, Message Switching
19	L19	Modems & Modulation	ASK, FSK, PSK, QAM
20	L20	Transmission Errors	Noise, Attenuation, Distortion
21	L21	Transmission Systems	Practical Examples
22	L22	Data Link Layer	Design Issues
23	L23	Error Detection Methods	Parity, CRC, Checksum
24	L24	Error Correction Methods	Hamming Code, ARQ
25	L25	Sliding Window Protocols I	Stop-and-Wait, One-Bit, Go-Back-N
26	L26	Sliding Window Protocols II	Selective Repeat
27	L27	Media Access Control I	ALOHA, Slotted ALOHA
28	L28	Media Access Control II	CSMA, Collision-Free Protocols
29	L29	LAN Technologies I	Ethernet, Switched Ethernet
30	L30	LAN Technologies II	Fast Ethernet, Gigabit Ethernet, Token Ring

31	L31	Wireless LANs	Wi-Fi & Bluetooth
32	L32	Routing Algorithms I	Flooding, Shortest Path Routing
33	L33	Routing Algorithms II	Distance Vector, Link State Routing
34	L34	Routing Techniques	Hierarchical Routing
35	L35	Congestion Control	Traffic Shaping, Choke Packets, Load Shedding
36	L36	Application Layer Services I	DNS, Email
37	L37	Application Layer Services II	WWW Services, HTTP
38	L38	Network Security Issues	Security Attacks (Active & Passive)
39	L39	Security Mechanisms I	Encryption, Firewalls
40	L40	Security Mechanisms II	Digital Signatures, Authentication