**Panipat Institute of Engineering & Technology**
**Department of CSE-AI&DS**
**LESSON PLAN**

**Subject:** Computer Network **Subject code: ES-CS-AIDS-305**

**Semester:** 5th

| S.No | Topic | CO Covered | Assignment No. | Teaching Methodology |
|---|---|---|---|---|
| 1 | **Unit I: Introduction to Computer Networks:** Data Communication System and its components | CO1 | 1 | Whiteboard & Marker |
| 2 | Data Flow, Computer network and its goals. Types of computer networks: LAN, MAN, WAN | CO1 | 1 | Whiteboard & Marker |
| 3 | Wireless and Wired networks. Broadcast and point-to-point networks | CO1 | 1 | Whiteboard & Marker |
| 4 | Network topologies, protocols. Interfaces and services. | CO1 | 1 | Whiteboard & Marker |
| 5 | ISO- OSI reference model. | CO1 | 1 | Whiteboard & Marker |
| 6 | TCP/IP architecture. | CO1 | 1 | Whiteboard & Marker |
| 7 | **Physical Layer** Concept of Analog Digital Signal. Bandwidth, Transmission Impairments: Attenuation, Distortion, Noise | CO2 | 1 | Whiteboard & Marker |
| 8 | Multiplexing: Frequency Division, Time Division, Wavelength Division. | CO2 | 1 | Whiteboard & Marker |
| 9 | Transmission Media: Twisted pair, Coaxial cable, Fiber optics. Wireless transmission (Radio, microwave, infrared) | CO2 | 1 | Whiteboard & Marker |
| 10 | Switching: Circuit Switching, Message Switching, Packet Switching & comparisons. Narrowband ISDN, Broadband ISDN. | CO2 | 2 | Whiteboard & Marker |
| 11 | **Unit II: Data link layer**:<br>Error Control, Types of errors. Framing (Character and Bit stuffing) | CO3 | 2 | Whiteboard & Marker |
| 12 | Error detection & correction methods; Flow control | CO3 | 2 | Whiteboard & Marker |
| 13 | Protocols: Stop & wait ARQ, Go-Back- N ARQ. Sliding window protocols. | CO3 | 2 | Whiteboard & Marker |
| 14 | **Medium access sub layer**: Point to point protocol. FDDI | CO3 | 2 | Whiteboard & Marker |
| 15 | Token bus, token ring, Reservation, polling | CO3 | 2 | Whiteboard & Marker |
| 16 | Multiple access protocols: Pure ALOHA, Slotted ALOHA, | CO3 | 2 | Whiteboard & Marker |
| 17 | CSMA, CSMA/CD, FDMA, TDMA. | CO4 | 2 | Whiteboard & Marker |
| 18 | FDMA, TDMA, CDMA, LLC | CO4 | 2 | Whiteboard & Marker |
| 19 | Traditional Ethernet, fast Ethernet. Network devices-Repeaters, Hubs, Switches, Bridges, Router, Gateway | CO4 | 2 | Whiteboard & Marker |

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| 20 | **Unit III: Network layer**: Addressing: Internet address, sub-netting | CO4 | 2 | Whiteboard & Marker |
| 21 | Routing techniques, static vs. dynamic routing, Routing table. | CO4 | 3 | Whiteboard & Marker |
| 22 | DHCP, IEEE standards 802.x | CO4 | 3 | Whiteboard & Marker |
| 23 | Routing algorithms: shortest path algorithm, flooding, Distance vector routing, Link state routing | CO5 | 3 | Whiteboard & Marker |
| 24 | Protocols: ARP, RARP, IP, ICMP, IGMP, IPV4, IPV6 | CO5 | 3 | Whiteboard & Marker |
| 25 | Unicast and multicast routing protocols, ATM | CO5 | 3 | Whiteboard & Marker |
| 26 | **Unit IV: Transport layer**: Process to process delivery, UDP; TCP, RPC | CO5 | 3 | Whiteboard & Marker |
| 27 | Congestion control algorithm: Leaky bucket algorithm, Token bucket algorithm, choke packets | CO5 | 3 | Whiteboard & Marker |
| 28 | Quality of service: techniques to improve QoS | CO6 | 3 | Whiteboard & Marker |
| 29 | **Application layer**: DNS, SMTP, FTP, HTTP & WWW. | CO6 | 3 | Whiteboard & Marker |
| 30 | S/MIME, IMAP, Firewalls, Bluetooth, Email | CO6 | 3 | Whiteboard & Marker |
| 31 | **Network Security**: Cryptography, User authentication, Security protocols in internet | CO6 | 3 | Whiteboard & Marker |
| 32 | Public key encryption algorithm, Digital Signature. | CO6 | 3 | Whiteboard & Marker |