MSC204 COMPUTER NETWORKS

Module I: 8 Hours

Data communication Components: Representation of data and its flow Networks, Various Connection Topology, Protocols and Standards, OSI model, Transmission Media, LAN: Wired LAN, Wireless LANs, Connecting LAN and Virtual LAN, Techniques for Bandwidth utilization:

Multiplexing - Frequency division, Time division and Wave division, Concepts on spread spectrum.

Module II: 10 Hours

Data Link Layer and Medium Access Sub Layer: Error Detection and Error Correction - Fundamentals, Block coding, Hamming Distance, CRC; Flow Control and Error control protocols - Stop and Wait, Go back – N ARQ, Selective Repeat ARQ, Sliding Window, Piggybacking, Random Access, Multiple Access Protocols. Pure ALOHA, Slotted ALOHA, CSMA, CSMACD and CSMA-CA.

Module III: 8 Hours

Network Layer: Switching, Logical addressing – IPV4, IPV6; Error reporting and Management protocols: ICMP, IGMP. Address mapping – ARP, RARP, Bootstrap protocol and DHCP–Delivery, Forwarding and Unicast Routing protocols.

Module IV: 10 Hours

Transport Layer: Process to Process Communication, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), SCTP Congestion Control; Quality of Service, QoS improving techniques: Leaky Bucket and Token Bucket algorithm.

Application Layer: Domain Name Space (DNS), DDNS, EMAIL, File Transfer Protocol (FTP), HTTP, SNMP. Firewalls and Introduction to Cryptography

Text Books:

1. B. A. Forouzan, Data Communication and Networking, 6th Edition, Tata McGraw–Hill, 2022.
2. Andrew S Tanenbaum, “Computer Networks”, 6th Edition, Pearson Education, 2022.

Reference Books:

1. J. F. Kurose and K. W. Ross, Computer Networking - A Top-Down Approach Featuring the Internet, 8th Edition, Pearson Education, 2022.
2. L. L. Peterson and B. S. Davie, Computer Networks: A Systems Approach, 6th Edition, Morgan Kaufmann Publishers, 2022.