

Computer Networks

UNITS	COURSE CONTENT	CONTACT HOURS
1	Introduction to Networks and Physical Layer: Network types and applications, OSI and TCP/IP Reference models, guided and unguided transmission media, encoding and modulation, switching techniques	5L
2	Data Link Layer: Framing, error detection and correction (CRC, parity), flow control, sliding window protocols, MAC protocols, IEEE standards (Ethernet, Wi-Fi)	7L
3	Network Layer: IPv4/IPv6 addressing, subnetting, routing concepts and algorithms (Distance Vector, Link State, OSPF, BGP), IP datagram structure, fragmentation	7L
4	Transport Layer: Transport services, UDP and TCP protocols, connection management, flow control, congestion control algorithms, quality of service	6L
5	Application Layer: DNS, HTTP, FTP, SMTP, POP, IMAP, network management protocols, P2P file sharing, multimedia streaming	5L
6	Network Security and Management: Firewalls, cryptography basics, VPN, intrusion detection, wireless network security, network monitoring techniques	5L
7	Emerging Topics and Case Studies: Wireless networks, mobile IP, IoT networking basics, network virtualization, cloud networking overview	5L