

SEMESTER-V
CS-501: COMPUTER NETWORKS

Teaching and Examination Scheme:

Teaching Scheme			Credits	Marks			Duration of End Semester Examination
L	T	P/D		Sessional	End Semester Exams	Total	
3	1	0	4	40	60	100	3Hrs

COURSE OBJECTIVE:

The course should enable the students to understand the basic concepts of data communications and to study the functions & protocols of OSI model.

COURSE CONTENT:

UNIT	CONTENT	No. of Hrs.
I	<p>Introduction: Data communication, networks, Internet, protocols and standards.</p> <p>Network Models: Layered tasks, the OSI model, layers in the OSI model, TCP/IP protocol suite, addressing.</p> <p>PHYSICAL LAYER Data & Signals: Analog & digital, periodic analog signals, digital signals, transmission impairments, data rate limits, performance, multiplexing, spread spectrum.</p> <p>Transmission Media: Guided media, unguided media, media comparison Switching: Circuit switched networks, datagram networks, virtual circuit networks, structure of a switch.</p>	10
II	<p>DATA LINK LAYER Error Detection and Correction: Introduction, block coding, linear block codes, cyclic codes, checksum.</p> <p>Data Link Control: Framing, flow & error control, protocols, noiseless channels, hdlc, point to point protocol.</p> <p>Multiple Accesses: Random access, controlled access, channelization.</p> <p>Wired LANs: Ethernet: IEEE standards, standard ethernet, changes in the standards, fast ethernet, gigabit ethernet, token bus, token ring, FDDI, comparison.</p>	10

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	<p>Wireless LANs: IEEE 802.11, bluetooth, other wireless networks.</p> <p>Connecting LANs and Virtual LANs: Connecting devices, backbone networks, virtual LANs</p>	
III	<p>NETWORK LAYER Network Layer Logical Addressing: Introduction to network layer, IPv4 addresses, IPv6 addresses.</p> <p>Network Layer Protocols: Internetworking, IPv4, IPv6, transition from IPv4 to IPv6, address mapping, ICMP, IGMP, ICMPv6, delivery, forwarding, unicast routing protocols, multicast routing protocols</p>	10
IV	<p>TRANSPORT LAYER Introduction to Transport Layer: Process to process delivery, internet transport-layer protocol, user data gram protocol (UDP), TCP, SCTP.</p> <p>APPLICATION LAYER Introduction to Application Layer: Domain name system, remote logging, electronic mail, file transfer, architecture of WWW, web documents, HTTP, standard client server protocols, network management, SNMP</p>	9

Text Books:

- Forouzan, B.A., "*Data communication and Networking*", McGraw Hill
- Tanenbaum, A.S., "*Computer Networks*", Prentice Hall

Reference Books:

- Kurose and Ross, "*Computer Networking: A Top Down Approach*", Addison-Wesley
- Stallings, W. "*Computer Networking with Internet Protocols and Tech*", Prentice Hall of India