

UEI622 DATA NETWORKS

L T P Cr
3 1 0 3.5

Introduction to Computer Networks: Uses of computer networks, Types of networks, Connection oriented and connectionless services.

Layered Network Architecture: The OSI Reference model, The TCP/IP reference model, Comparison of OSI and TCP reference models

Physical Layer: Overview of communication channels, Maximum Data Rate of a channel, Transmission media, Twisted pair, Coaxial, Fiber optics, Microwave, Satellite etc., Telephone system, Trunks and Multiplexing (PDH.SDH), Switching, Packet switching and circuit switching, N-ISDN, Broadband ISDN and ATM, Virtual circuits Vs Circuit switching, Transmission in ATM networks, Frame relay.

Data Link Layer: Error detection and correction, ARQ, Flow control and framing in data link layer, Sliding windows protocols, HDLC, Data link layer in Internet, Data layer in ATM.

Medium Access Sublayer: Queuing models, Little's theorem, M/M/1, M/M/m and M/G/1, Queuing systems. Static and dynamic allocation of channels in LANs, Multiple access protocols, Throughput, Delay and stability of ALOHA systems. CSMA and CSMA/CD Systems, IEEE 802 standards for Ethernet, Token bus and token ring, High speed LANS-FDDI.

Network Layer: Routing algorithms, Dijkstra algorithm, Bellman Ford algorithm, Optimality principle, Congestion control algorithms, Internetworking, The network layer in Internet, Network layer in ATM.

Transport Layer: Internet Transport Protocols (TCP and UDP), ATM adoption layer, performance of computer networks.

Text Books:

1. Dimitri, P., Gallager, B., *Data Networks, Prentice–Hall of India Private Limited (2004).*
2. Tanenbaum, A.S., *Computer Networks, Prentice–Hall of India Private Limited (2005).*

Reference Books:

1. Dumas, M.B., *Principles of Computer Networks and Communications, Prentice–Hall of India Private Limited (2003).*
2. Steven, W.R., *TCP/IP Illustrated (Vol. 2): The Implementation, Addison Wesley, (2002).*

Evaluation Scheme:

Sr. No.	Evaluation Elements	Weightage (%)
1	MST	30
2	EST	45
3	Sessionals (May include Assignments/Projects/Tutorials/Quizzes/Lab Evaluations)	25

