

17ES019 DATA COMMUNICATIONS

Hours Per Week :

L	T	P	C
3	1	-	4

Total Hours :

L	T	P	WA/RA	SSH/HS	CS	SA	S	BS
45	15	-	15	30	-	5	5	-

Course Objectives:

The objective of the course is to ensure that students have the necessary networking skills to design, implement, and analyze data communication networks.

Course Outcomes:

- To be able to understand the concepts of data communication and networks
- To be able to understand different protocols that are require at various layers of the network model
- To be able to analyze the given network and know its performance for various situations.

SKILLS:

- Gain knowledge on Data Communication Networks,
- Design of Various Networks
- Simulation of Routing Protocols

ACTIVITIES:

- o simulation of distance vector algorithm
- o simulation of link state algorithm
- o simulation of RIP algorithm
- o simulation of IGRP and EIGRP routing protocols
- o Spanning Tree algorithms and bridging
- o Implementation of HTML http web pages and hosting it to server

UNIT – I

Data Communication Systems: History of data communications, Network architecture, Protocols and standards, Layered network architecture, Open systems interconnection, Network topologies, LAN, WAN and MAN, Data communication hardware, DTE and DCE, Serial interfaces, Network interface card, Modem, Digital data digital signals, Digital data analog signals, Circuit switching vs. Packet switching

UNIT – II

Local Area Networks : Transmission formats – Baseband vs Broadband, LAN topologies, Collision vs broadcast domains, Connectivity devices, Medium access control and Logical link control sublayers, Channel access problem, MAC addressing, Ethernet - evolution of Ethernet, Variants of Ethernet.

UNIT – III

Internetworking : TCP/IP Protocol suite, Comparison with ISO suite, IP address notation, IP address classes, Address masking, Introduction to subnetting, Subnet masking for Class A, B, and C, Supernetting, Classless IP addressing, Classless interdomain routing , Address resolution protocol, Hardware addresses vs IP addresses, IP datagram, Different fields of IP header

UNIT - IV

IPv6 and Routing : Internet protocol version 6, Advantages of IPv6, IPv6 Addressing format, IPv6 header, Routing in Internets, Static vs Dynamic routing, Routing Tables, Distance Vector Routing, Link State Routing, Hierarchical routing, Broadcast Routing, Multicast Routing

UNIT – V

Transport and Application Layers : Transport layer protocols, Introduction to transport layer, Port address, User datagram protocol- UDP, Transmission control protocol-TCP, Header of TCP, Various fields of TCP header, TCP connection establishment and termination, TCP error control and Flow control, Domain name system-DNS, Dynamic

host configuration protocol-DHCP

TEXT BOOKS:

1. Wayne Tomasi, "Introduction to Data Communication and Networking", 1/e, Pearson Education 2000
2. A S Tanenbaum, "Computer Networks", 5th Edition, PHI 2001

REFERENCE BOOKS:

1. James .F. Kurose & W. Rouse, "Computer Networking: A TopdownApproach Featuring", 3/e, Pearson Education. 2001
2. Forouzan, "Data Communications and Networking", 4th Edition, McGraw Hill 2001
3. William Stallings, "Data and Computer Communication", Eighth Edition, Pearson Education, 2000