

Devi Ahilya University, Indore, India Institute of Engineering & Technology				III Year B.E. (Electronics and Telecommunication Engg.)			
Subject Code & Name	Instructions Hours per Week			Credits			
5ETRG3 COMPUTER NETWORKS	L	T	P	L	T	P	Total
	3	1	0	3	1	0	4
Duration of Theory Paper: 3 Hours							

Course Learning Objective:

The course is designed

1. To understand the basics of Data Communication.
2. To understand the principles of computer networking, including protocol design, protocol layering, algorithm design, and performance evaluation.
3. To study and understand TCP/IP Protocol suite designed for the application layer, transport layer, network layer, Data link layer and Physical Layer.
4. To implement various Algorithms of TCP/IP suite and analyse their performance.

Pre requisites: Fundamental knowledge of data transmission

COURSE CONTENTS

Unit I

Computer network – Hardware, Software, Reference model, physical layer

Network and application, categories of network- LAN, MAN, WAN, Wireless Network, Internetwork, Reference models.– OSI, TCP/IP model and their comparison, Line configuration-point to point, Multicast, Broadcast, Network Topology – Mesh, Star, Tree, Bus, Ring, Hybrid

Physical Layer – Nyquist and Shannon maximum data rate of a channel, Transmission media – Guided and Unguided, Twisted Pair, coaxial cable, fiber optics etc., Wireless as radio wave, microwave, infrared. Multiplexing-TDM, FDM, WDM, Switching – circuit, message, packet switching.

Unit II

Data Link Layer

Framing techniques, Error detection and correction- Parity check, Linear block codes, Hamming Codes, CRC Codes, Repeaters, Hubs, Bridges, Switches, Routers and gateways, Data link Layer Flow Control protocols-- Unrestricted simplex protocol, stop & wait with and without ARQ, Sliding window concept, Go-back- n, Selective repeat, Data link layer in internet.

Unit III

Medium Access control sublayer

CO1		2	1									
CO2	1							3				
CO3	1								2			
CO4				1			2					
CO5	2		1		3							

BOOKS RECOMMENDED:

- [1] Andrew S. Tannenbaum, Computer Networks, 4/E Pearson Education, 2003 ,
- [2] William Stallings ,Data and Computer Communications , 8/E Prentice Hall India, 2007
- [3] Behrouz A.Forouzan , Data Communications and Networking ,4/E Tata McGraw-Hill, 2000