Computer Networks

Course Code	23EC4602D	**Year**	III	**Semester**	II
Course Category	PE III	**Branch**	ECE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Linear, algebra, Statistics and Probability
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		BL
CO1	Understand network concepts, OSI/TCP - IP models, topologies and transmission media.	L2
CO2	Apply appropriate Packet switching mechanism/Addressing Formats For a given scenario, data link layer functions and error control methods.	L3
CO3	**Analyze** IEEE 802.X standards, MAC, transport layer protocols and application layer services.	L4
CO4	**Apply** routing algorithms and congestion control techniques in network layer design.	L3

Mapping of Course Outcomes with Program Outcomes (CO/PO/PSO Matrix)
Note:1-Weak correlation 2-Medium correlation 3-Strong correlation
*-Average value indicates course correlation strength with mapped PO

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	2	-									1	2	
CO2	3										1	3	
CO3	3	3									1	3	
CO4	3	2									1	2	
Average	3	2									1	3	

Syllabus		
Unit No.	**Contents**	**Mapped CO**
1	**Introduction:** Uses of Computer Networks, OSI, TCP/IP, Examples of Networks: Novell Network, Arpanet, Internet, Network Topologies, WAN, LAN, MAN. **Physical Layer:** Transmission media: Copper twisted pair, wireless, Switching techniques, ISDN and ATM	CO1, CO2
2	Data link layer: Design issues, framing, Error detection techniques, CRC, Elementary Protocol-stop and wait, Sliding Window, Data link layer in HDLC **Medium Access sub layer:** ALOHA, Carrier Senses Multiple Accesses, Ethernet (IEEE 802.3), Wireless LAN (IEEE 802.11).	CO1, CO2, CO3
3	**Network Layer**-Design and Routing: Virtual circuit and Datagram subnets, Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broadcast, Multicast, distance vector routing.	CO1, CO4
4	**Transport Layer:** Connection oriented and connection less service, User Datagram Protocol, Transmission Control Protocol, Congestion Control.	CO1, CO3
5	**Application Layer:** Name System: Name Space, DNS in Internet, Electronic Mail, World WEB, Basics of Multi Media.	CO1, CO3

Learning Resources
Text Books
1. Andrew S Tanenbaum, Computer Networks, Pearson Education India, PHI, 5th Ed., 2016. 2. Behrouz A.Forouzan, Data Communications and Networking, TMH, 5th Ed., 2017.
References
1. William A Shay, Thomson, Understanding communications and Networks, *Thomson press*, 3rd Ed.,2025. 2. Dimitri P.Bertsekas & Robert Gallger, Data Networks, prentice Hall, 2nd Ed., 2013.
E-Resources
1. http://home.iitk.ac.in/~navi/sidbinetworkcourse/lecture1.ppt 2. http://nptel.iitm.ac.in/courses/IIT-MADRAS/Computer_Networks/index.php