

Branch Name:	Computer Engineering / Information Technology / Information and Communication Technology
Program Code:	ET103/ ET105 / ET107
Course Title:	Computer Network
Course Code:	2ET1030404T
Pre-requisite Course:	Basic knowledge of Computer & discrete mathematics

Course Objectives:

1. Understand the fundamental concepts of computer network.
2. Students gain knowledge of the how to connect two or more networking devices and how transfer the data.
3. Understand the division of network layers and functionalities of OSI and TCP/IP model.
4. With help of TCP/IP model, students expose the functionality at each layer using various protocols.
5. Students also gain knowledge of network hardware.
6. Analyze and understand the topological and routing strategies for an IP based networking infrastructure.

Teaching and Examination Scheme:

Credit	Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	Fundamental concepts of computer networks: Network, Internet and Intranet, Computer Network Applications, Bandwidth, Guided and unguided transmission media. Transmission modes: Simplex, Duplex, Full duplex, Packet and circuit Switching, Physical Topology, Classification of computer network: LAN, MAN, WAN, Network Models: OSI and TCP/IP, Networking Devices: bridges, Remote Bridge, Repeaters, Hub, Switches, Routers, Gateway	7	20
2	Application layer: World Wide Web: Architectural overview, Hyper Text Transfer Protocol, Concept of cookies, proxy server, File transfer protocol, Simple Mail Transfer Protocol, Domain Name Server	4	15
3	The Transport Layer: The transport service, the transport protocol: User datagram protocol (UDP), and Transmission control protocol (TCP), Congestion control, Multiplexing and Demultiplexing, Principles of reliable data transfer, Reliable data transfer Protocols: rdt1.0, rdt2.0, rdt3.0, Go-Back-N, Selective Repeat.	10	20
4	Network Layer: Introduction to Network layer, Logical Addressing, IP: IPv4 and IPv6, Routing algorithms, Routing Protocols: RIP, OSPF, BGP Dynamic Host Configuration Protocol (DHCP), Network Address Translation	9	20
5	The Data Link Layer The Data Link Layer services: Framing, Error control, Flow control, Error detection and correction, Elementary data link protocols: Simplex, stop and wait, Sliding window protocol, HDLC. Introduction to The Medium Access Control layer.	5	25

Reference Books:

1. Introduction to data communication and networking, Behrouz Forouzan, TMH
2. Computer network, Andrew S. Tanenbaum, Pearson.
3. Data and computer communication, William Stallings, Pearson
4. Computer Networking- A Top-Down approach, Kurose and Ross, Pearson
5. Computer Networks- A Top-Down approach, Behrouz Forouzan, McGraw Hill

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
CLO1	To understand the basic terminology used in computer network for data transmission.	2 Understanding
CLO2	To understand and fundamental knowledge on the OSI and TCP/IP model	2 Understanding
CLO3	To identify the networking devices and transmission media.	2 Understanding, 3 Critical thinking
CLO4	To have a detail about layering approach and functionality with protocols for efficient communication.	3 Applying, 2 Understanding
CLO5	To explore, analyze and specify the topological and routing strategies for an IP based networking infrastructure.	3, Applying 4, Analyze
CLO6	Run and understand all networking commands.	3 Applying, 2 Understanding

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M								L							
CLO2	M								M							
CLO3	L		L			L						M				
CLO4						L										
CLO5	L					L		L				M				
CLO6	M		L						M							

H: High, M: Medium, L: Low