22CST52 - COMPUTER NETWORKS							
Programme & Branch	**B.E. - Computer Science and Engineering**	**Sem.**	**Category**	**L**	**T**	**P**	**Credit**
Prerequisites	**NIL**	**5**	**PC**	**3**	**0**	**0**	**3**

Preamble	This course provides an overview of the basics of data communications and networking. The course presents the top-down approach of layers and also the functionalities and protocols of different layers	
Unit – I	**Introduction to the Internet:**	**9**
Internet – Network edge: Access networks – Physical media – Network core: Packet switching – Circuit switching – Network of networks - Delay, loss and throughput in packet-switched networks – Protocol layers and their service models.		
Unit – II	**Application Layer:**	**9**
Principles of Network applications – The web and HTTP – Electronic mail in the internet – DNS-Internet's directory service – Peer-to-Peer File Distribution – Video Streaming and Content Distribution Networks – Socket programming: Creating Network applications		
Unit – III	**Transport Layer:**	**9**
Introduction and transport layer services – Multiplexing and Demultiplexing – Connectionless transport: UDP – Principles of reliable data transfer: Reliable Data Transfer over a Lossy Channel with Bit Errors: rdt3.0 - Go-Back-N – Selective Repeat – Connection-oriented transport: TCP – TCP congestion control		
Unit – IV	**Network Layer:**	**9**
Overview – Inside a router – Internet Protocol (IP): IPv4, Addressing, IPv6 – Generalized forwarding and SDN –Routing algorithms: Link-State and Distance-Vector – Intra-AS routing in the Internet: OSPF – ICMP		
Unit – V	**Link Layer and LAN:**	**9**
Introduction to Link layer – Error detection and correction techniques – Multiple access links and protocols – Switched LAN - Security in Computer Networks: Principles of Network Security – Principles of Cryptography: Symmetric Key Cryptography, Public Key Encryption		
		Total:45

TEXT BOOK:

1. Kurose James F. and Ross Keith W., "Computer Networking: A Top-Down Approach", 8th Edition, Pearson Education, New Delhi, 2022.

REFERENCES:

1. Behrouz A. Forouzan, "Data Communications and Networking", 6th Edition, McGraw Hill Education, 2022.
2. Andrew S. Tanenbaum, Nick Feamster, David J. Wetherall, "Computer Networks", 6th Edition, Pearson Education, 2022.

COURSE OUTCOMES: On completion of the course, the students will be able to		**BT Mapped (Highest Level)**
CO1	evaluate the performance of a network in terms of different QoS parameters	Applying (K3)
CO2	develop client-server applications using application layer protocols	Applying (K3)
CO3	identify a suitable transport layer protocol for a given application	Applying (K3)
CO4	apply various routing protocols for a given network scenario	Applying (K3)
CO5	demonstrate the need for link layer protocols in providing error free transmission	Applying (K3)

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	1	1				1	1	1		3	1
CO2	3	2	1	1	1				1	1	1		3	1
CO3	2	2	1	1	1				1	1	1		3	1
CO4	3	2	1	1	1				1	1	1		3	1
CO5	3	2	1	1	1				1	1	1		3	1

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN – THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	-	65	35	-	-	-	100
CAT2	-	50	50	-	-	-	100
CAT3	-	50	50	-	-	-	100
ESE	-	50	50	-	-	-	100

* ±3% may be varied (CAT 1, 2, 3 – 50 marks & ESE – 100 marks)