

**SARDAR RAJA COLLEGES**

**SARDAR RAJA COLLEGE OF ENGINEERING, ALANGULAM**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**MICRO LESSON PLAN**



**SUBJECT NAME : COMPUTER NETWORKS**

**SUBJECT CODE : EC 2352**

**YEAR/SEM : III/ VI**

**BRANCH : ECE**

**STAFF NAME: Ms. S.ANITA JOHANNAH GOLDA**

**AP/ECE**

# **SUBJECT DESCRIPTION AND OBJECTIVES**

## **DESCRIPTION**

A computer network or data network is a telecommunications network that allows computers to exchange data. In computer networks, networked computing devices (network nodes) pass data to each other along data connections. The connections (network links) between nodes are established using either cable media or wireless media. The best-known computer network is the Internet.

The goal of this subject is to introduce the basics computer networks. Students will learn the fundamental layered structure, understand common offered layered services, examine protocols and algorithms used to operate the network.

This primarily aims to acquaint the student with basic computer and communication networking technologies and the layered approach that makes design, implementation and operation of computer and communication networks possible. At the same time, concepts of network performance are introduced and the performances of some classical networking architecture are analyzed. It introduces the concept, terminologies, and technologies used in modern data communication and computer networking.

## **OBJECTIVES**

- To introduce the students the functions of different layers.
- To introduce IEEE standard employed in computer networking.
- To make students to get familiarized with different protocols and network components.

**UNIT I PHYSICAL LAYER****9**

Data Communications – Networks - Networks models – OSI model – Layers in OSI model – TCP / IP protocol suite – Addressing – Guided and Unguided Transmission media  
Switching: Circuit switched networks – Data gram Networks – Virtual circuit networks Cable networks for Data transmission: Dialup modems – DSL – Cable TV – Cable TV for Data transfer.

**UNIT II DATA LINK LAYER****10**

Data link control: Framing – Flow and error control –Protocols for Noiseless and Noisy Channels – HDLC  
Multiple access: Random access – Controlled access  
Wired LANS : Ethernet – IEEE standards – standard Ethernet – changes in the standard – Fast Ethernet – Gigabit Ethernet.  
Wireless LANS : IEEE 802.11–Bluetooth.  
Connecting LANS: Connecting devices - Backbone networks - Virtual LANS  
Virtual circuit networks: Architecture and Layers of Frame Relay and ATM.

**UNIT III NETWORK LAYER****9**

Logical addressing: IPv4, IPv6 addresses  
Internet Protocol: Internetworking – IPv4, IPv6 - Address mapping – ARP, RARP, BOOTP, DHCP, ICMP, IGMP, Delivery - Forwarding - Routing – Unicast, Multicast routing protocols.

**UNIT IV TRANSPORT LAYER****7**

Process-to-Process delivery - User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QoS) – Techniques to improve QoS.

**UNIT V APPLICATION LAYER****10**

Domain Name System (DNS) – E-mail – FTP – WWW – HTTP – Multimedia Network  
Security: Cryptography – Symmetric key and Public Key algorithms - Digital signature – Management of Public keys – Communication Security – Authentication Protocols.

**TOTAL : 45 PERIODS**

## **TEXT BOOKS**

1. Behrouz A. Foruzan, “Data communication and Networking”, Tata McGraw-Hill, 2006: Unit I-IV
2. Andrew S. Tannenbaum, “Computer Networks”, Pearson Education, Fourth Edition, 2003: Unit V

## **REFERENCES**

1. Wayne Tomasi, “Introduction to Data Communication and Networking”, 1/e, Pearson Education.
2. James .F. Kurose & W. Rouse, “Computer Networking: A Topdown Approach Featuring”, 3/e, Pearson Education.
3. C.Sivaram Murthy, B.S.Manoj, “Ad hoc Wireless Networks – Architecture and Protocols”, Second Edition, Pearson Education.
4. Greg Tomshon, Ed Tittel, David Johnson. “Guide to Networking Essentials”, fifth edition, Thomson India Learning, 2007.
5. William Stallings, “Data and Computer Communication”, Eighth Edition, Pearson Education, 2000.

## MICRO LESSON PLAN

HOURS	LECTURE TOPICS	READING
<b>UNIT I PHYSICAL LAYER</b>		
1	Data Communications	T1
2	Networks ,Networks models	
3	OSI model , Layers in OSI model	
4	TCP / IP protocol suite	
5	Addressing	
6	Guided and Unguided Transmission media	
7	Switching: Circuit switched networks , Data gram Networks	
8	Virtual circuit networks Cable networks for Data transmission	
9	Dialup modems – DSL	
10	Cable TV – Cable TV for Data transfer.	
<b>UNIT II DATA LINK LAYER</b>		
11	Data link control: Framing	T1
12	Flow and error control	
13	Protocols for Noiseless and Noisy Channels	
14	HDLC	
15	Multiple access: Random access	
16	Controlled access	
17	Wired LANS : Ethernet	

18	IEEE standards ,standard Ethernet , changes in the standard	T1
19	Fast Ethernet , Gigabit Ethernet.	
20	Wireless LANS : IEEE 802.11–Bluetooth.	
21	Connecting LANS: Connecting devices , Backbone networks , Virtual LANS	
22	Virtual circuit networks: Architecture and Layers of Frame Relay and ATM.	
<b>UNIT III NETWORK LAYER</b>		
23	Logical addressing: IPv4	T1
24	IPv6 addresses	
25	Internet Protocol: Internetworking – IPv4	
26	IPv6	
27	Address mapping – ARP, RARP, BOOTP	
28	DHCP, ICMP, IGMP	
29	Delivery – Forwarding	
30	Routing	
31	Unicast routing protocols	
32	Multicast routing protocols	
<b>UNIT IV TRANSPORT LAYER</b>		
33,34	Process-to-Process delivery	T1
35,36	User Datagram Protocol (UDP)	

37	Transmission Control Protocol (TCP)	T1
38	Congestion Control	
39	Quality of services (QoS)	
40	Techniques to improve QoS	
<b>UNIT V APPLICATION LAYER</b>		
41	Domain Name System (DNS)	T1
42	E-mail – FTP	
43	WWW – HTTP	
44	Multimedia Network	
45	Security: Cryptography	T2
46	Symmetric key and Public Key algorithms	
47	Digital signature	
48	Management of Public keys	T1
49	Communication Security	
50	Authentication Protocols	