Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
CPC504	**Computer Networks**	4	-	--	4	-	--	4
		Examination Scheme						
		ISE		MSE	ESE			
		10		30	100 (60% Weightage)			

Pre-requisite Course Codes	-	
At end of successful completion of this course, student will be able to		
Course Outcomes	CO1	Conceptualize all the OSI Layers.
	CO2	Understand all the layer of TCP/IP Protocol Suite using the concepts of OSI Reference Model.
	CO3	Distinguish the components of Simple Network Management Protocol
	CO4	Investigate all the application layers protocols of TCP/IP Protocol Suite.

Module No.	Topics	Ref.	Hrs.
1	**Introduction** History and development of computer network, networkapplication, network software and hardware components, topology,protocol hierarchies, design issues for the layers, connection oriented and connectionless services, reference models: layer details of OSI, TCP/IP models. Communication between layers.	1-7	**06**
2	**Physical Layer** Guided Transmission Media: Twisted pair, Coaxial, Fiber optics, Unguided media (Wireless Transmission): Radio Waves, Bluetooth, Infrared, and Virtual LAN.	1-7	**06**
3	**Data Link Layer** DDL Design Issues, Functionalities of DLL, Flow control algorithms, Sliding Window, Error Detection & Correction techniques, SDLC, PPP, and Framing. **MAC Layer** Aloha protocols, Control Access Protocol, Carrier SenseMultipleAccess(CSMA), Ethernet, Local Area Networks -	1-7	**09**

	Ethernet, Token ring, FDDI.		
4	**Network layer** Communication Primitives: Unicast, Multicast, Broadcast. IPAddressing, Subnetting, IPv4, IPv6, Routing algorithms : Link state routing, Distance Vector Routing, ARP, RARP,ICMP,Routing protocols - RIP, OSPF, BGP, IGRP,Congestion control algorithms: Open Loop congestioncontrol, Closed Loop congestion control.	1-7	**08**
5	**Transport Layer** The Transport Service: Transport service primitives, Berkeley Sockets, Connection management, UDP, TCP, Socket Programming (TCP & UDP), Socket Programming examples, TCP Flow control, TCP Congestion Control, Multiplexing.	1-7	**08**
6	**Application Layer** DNS, HTTP, E-mail, SMTP, Telnet, FTP, Security-GP-SSH.	1-7	**06**
7	**Network Management** SNMP Concept, Management Components, SMI, MIB, SNMP Format, Messages.	1-7	**04**
		Total	**48**

References:

[1] A.S. Tanenbaum, "*Data Communications and Networking*", Pearson Education, FOURTHEdition.

[2] Behrouz Forouzan, "*Data Communications and Networking*", McGraw-Hill, FOUURTHEdition.

[3] M. A. Gallo and W. M. Hancock, "Computer Communications and Networking Technologies", Cengage Learning (Indian Edition), FIRST Edition.

[4] Natalia Olifer& Victor Olifer, "Computer Networks: Principles, Technologies & Protocols for Network Design", Wiley India, 2011.

[5] Larry L. Peterson, Bruce S. Davie, "Computer Networks: A Systems Approach", The Morgan Kaufmann Series in Networking.

[6] James F. Kurose, Keith W. Ross, "Computer Networking", Pearson, SIXTH Edition.

[7] Srinivasan Keshav, "An Engineering Approach To Computer Networking: Atm Networks, The Internet", Addison-Wesley Professional Computing Series.