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
ETC603	Computer Communication Networks	4	-	--	4	-	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes		ETC 502 Analog Communication
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Conceptual understanding and functional aspects of computer communication and telecom networks.
	CO2	Design and configure small/medium sized computer network that meets a specific needs for communications.
	CO3	Simulate computer networks and analyze the simulation results including troubleshoot connectivity problem occurring at layers of TCP/IP model.

Module No.	Unit No.	Topics	Ref.	Hrs.
1		**Network Architectures, Protocol layers, and their Service Models:**	4,5	04
	1.1	OSI-RM model and TCP/IP protocol		
2		**Principles of Network Applications:**	4,5	10
	2.1	Application layer protocols such as HTTP, FTP, and SMTP.		
	2.2	Peer-to-Peer File Sharing Protocols and Architectures		
	2.3	ISPs and Domain name systems, Socket API and network socket programming		
3		**Reliable and Unreliable Transport-layer protocols:**	2,3,4	10
	3.1	TCP and UDP, Port numbers, Multiplexing and de-multiplexing		
	3.2	Flow control and congestion control. fairness delay, jitter, and loss in packets witched networks		
	3.3	Bandwidth, throughput, and quality-of-service		
4		**Network layer Services and Protocols**	3,4,5	10
	4.1	Switching fabric, routing and forwarding, queues and buffering		
	4.2	Virtual-circuit and datagram networks, internet protocol. IPv4 and IPv6 tunneling		
	4.3	Link State and Distance Vector algorithms, Routing in the Internet RIP, OSPF, and BGP		
	4.4	Broadcast and multicast, handling mobility		
5		**Data link layer Services and Protocols:**	4,5	10
	5.1	Link-layer and its services, Ethernet, hubs, bridges, and switches		

	5.2	Link-layer addressing, ATM and MPLS		
	5.3	Local area networks and IEEE 802.11 wireless LANs, multiple-access protocols. Random access, efficiency of pure and slotted ALOHA, CSMA, CSMA/CD, and CSMA/CA		
6		**Introduction to Physical-layer Services and Systems**	4,5	8
	6.1	Introduction to physical media, Coax, fiber, twisted pair, DSL, HFC, WiMax, cellular, satellite, and telephone networks, bit transmission, frequency division multiplexing. time division multiplexing		
			Total	**52**

References
1. Andrew Tanenbaum, *"Computer Networks",* PHI New Dehli,
2. Natalia Olifer and Victor Olifer, " Computer Networks", Wiley India,New Delhi
3. J. F. Kurose and K. W. Ross, "*Computer Networking: A Top-Down Approach*", Pearson Publication , 5th Edition, March 2009
4. L.Garcia et al, "*Communication Networks*", McGraw Hill Publication, 2nd Edition
5. B. Forouzan, "*Data Communication and Networking*", McGraw Hill Publication, 5th edition.