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
ETC803	Internet and Voice Communication	4	--	--	4	--	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes	ETC 502: Analog communication ETC 601: Digital Communication ETC 604: Computer Communication and Networks	
After successful completion of the course, student will be able to		
Course Outcomes	CO1	To implement LAN using both static and dynamic addressing techniques including subnetting and explain the components of a router including DHCP, NAT/PAT, routing function, switching function.
	CO2	Install, Configure troubleshoot and upgrade client and server operating systems and working of DNS as global internet including caching and primary servers.
	CO3	Explain how TCP byte stream sliding window is related to a traditional packet based sliding window algorithm, the concept of encapsulation and its relationship to layering in the network model.
	CO4	Implement VoIP and explain about the real time interactive audio video systems.

Module No.	Unit No.	Topics	Ref.	Hrs.
1	**Review of TCP /IP:**		1,2	06
	1.1	TCP /IP networking model, layer functions.		
	1.2	TCP/IP protocols, services, sockets and ports, encapsulations, difference between ISO and Internet layering.		
2	**Application Layer:**		1,2	08
	2.1	Host configuration, DHCP		
	2.2	Domain Name System (DNS), remote Login, TELNET and SSH		
	2.3	FTP and TFTP, World Wide Web, HTTP, electronic mail, SMTP, POP, IMAP, and MIME		
3	**Transport Layer:**		1,2	12
	3.1	User datagram protocol(UDP) header fields and their functions, pseudo header		
	3.2	Transmission control protocol (TCP), need for stream delivery, properties of reliable stream delivery, TCP header fields, ports, connections, end points, passive and active open, segment, stream		

		and sequence numbers, variable window size and flow control.		
	3.3	Out of band data, checksum, acknowledgement and retransmission, round trip samples		
	3.4	Karn's algorithm, timer back off, response to delay variation and congestion, TCP state machine, connection establishment		
4	**Internetworking layer:**		1,3,4	08
	4.1	Internet protocol (IP) datagram, header fields and their functions		
	4.2	Internet control message protocol, IP address classes, broadcast, multicast and special addresses, network space and host space, subnets and supernets		
	4.3	Private IP addresses, classless inter domain routing (CIDR), CIDR subnet addressing, variable length in CIDR subnet addressing		
5	**Voice Communication**			04
	5.1	Digitizing audio and video, audio compression, video compression		
6	**Real-Time Interactive Audio and Video**		1,4	16
	6.1	Characteristics, RTP, RTP packet format		
	6.2	UDP port, RTCP, sender report, receiver report, source description message, bye message, application-specific message, UDP port		
	6.3	SIP,H.323		
	6.4	Flow characteristics, flow classes, techniques to improve QOS, resource reservation, admission control		
			Total	**52**

References:

1. B. Forouzan, ―*TCP/IP Protocol Suite*‖ , 4th Edition, McGraw-Hill Publication
2. Leon Garcia, ―*Communication Networks*‖ , 2nd Edition McGraw-Hill Publication
3. Kurose and Ross, ―*Computer Networking*‖ , 5th Edition Pearson Publication
4. Ted Wallingford, ―*Switching to VoIP*‖ , Oreilly Publication