

Course Code	Course Name	Examination Scheme								
		Theory Marks					Term Work	Practical	Oral	Total
		Internal assessment			End Sem. Exam					
		Test 1	Test 2	Ave. Of Test 1 and Test 2						
ETC803	Internet and Voice Communication	20	20	20	80	-	-	-	100	

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Course Pre requisite :

- ETC 502: Analog communication
- ETC 601: Digital Communication
- ETC 604: Computer Communication and Networks

Course Objectives:

- To focus on Internet protocol, standards, services and administration.
- To discuss voice over IP as a real-time interactive audio/video service.

Course Outcomes: The students will be able to:

- Implement local area networks using both static and dynamic addressing techniques including sub netting.
- Install, configure, and troubleshoot server and client operating systems.
- Disassemble, troubleshoot/debug, upgrade, replace basic components, and reassemble servers and client systems.
- Explain the concept of encapsulation and its relationship to layering in the network models.
- Explain how TCP's byte-stream sliding window is related to a traditional packet-based sliding window algorithm.
- Explain the operation of the components of a router including, DHCP, NAT/PAT, Routing function, Switching function.
- Describe how DNS works in the global Internet including caching and root servers.

Module No.		Topics	Hrs.
1.		Review of TCP/IP:	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:	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:	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:	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	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

Recommended Books:

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

Internal Assessment (IA):

Two tests must be conducted which should cover at least 80% of syllabus. The average marks of both the test will be considered as final IA marks

End Semester Examination:

1. Question paper will comprise of 6 questions, each of 20 marks.
2. Total 4 questions need to be solved.
3. Question No.1 will be compulsory and based on entire syllabus wherein sub questions of 2 to 5 marks will be asked.
4. Remaining question will be selected from all the modules.