

GUJARAT TECHNOLOGICAL UNIVERSITY

COMPUTER ENGINEERING (SOFTWARE ENGINEERING) (02) AND INFORMATION TECHNOLOGY (23)

INTERNETWORKING AND APPLICATIONS

SUBJECT CODE: 2732302

M.E. SEM-III

Type of course: Regular

Prerequisite: NA

Rationale: NA

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	ESE (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	2	5	70	30	20	10	10	10	150

Course Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Computer Network Introduction to networks – Network topology – Types of networks – Network architecture – Layering – Design issues – Client/Server model – Protocols – Bridges – Routers – Repeaters – Switches.	04	05
2	BASICS OF INTERNETWORKING Introduction to internetworking – Internetworking concepts and architectural model – Internet addressing –Domain Name System (DNS) – Address Resolution Protocol (ARP) – Reverse Address Resolution Protocol(RARP).	08	20
3	Introduction to WAN Networking Technologies. ISDN, SMDS,Frame Relay,ATM, xDSL, SONET	08	15
4	INTERNETWORK ROUTING PROTOCOL Introduction to IPv4 and IPv6 protocol – Virtual networks – Concept of unreliable delivery – Connectionless deliverysystem – Purpose on internet protocol – Internet data gram – Data gram options. Introduction to routing - IP data gram – Direct and indirect delivery- Table driven IP routing – Next hop routing- HIARCHIAL ROUTING AND ITS ISSUES	10	25
5	TRANSMISSION CONTROL PROTOCOL Introduction to TCP – Properties of reliable delivery service – TCP protocol – TCP segment format – TCP connection	05	10
6	INTERNETWORKING APPLICATIONS Linux sockets programming and TCP/IP protocol implementation. Router Configuration etc. VoIP, Simple Mail Transfer Protocol (SMTP) - Post Office Protocol (POP) - File Transfer Protocol (FTP) – Telnet – Simple Network Management Protocol (SNMP) – Internet and intranet security issues,	10	35

	IDS and firewall design. Internetwork based Video-on Demand , Internetwork based Digital Library		
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Reference Books:

1. Douglas E. Comer, 'Internetworking with TCP/IP Volume 1', Third Edition, Prentice Hall, 2001.
2. Andrew S.Tananbaum, 'Computer Networks', Fourth Edition, Prentice Hall of India/Pearson Education, 2003.
3. Bechrouz A. Forouzan, 'TCP/IP Protocol Suite', Second Edition, Tata McGraw Hill, 2000.
4. William Stallings, 'Data and Computer Communications', Seventh Edition, Prentice Hall of India/Pearson Education, 2003.
5. Internetworking Technologies by Rahul Banerjee, PHI

Course Outcome:

To introduce the student to study the basic concepts of networking, interconnection of networks, IP protocol and it's routing and the Internet applications.

List of Experiments:

1. Study of IPv4 addresses, subnet masks, and addressing notations.
2. Study of Campus Wide Area Network.
3. Implementation of Routing Protocols
4. Study of Router Configurations
5. Implementing Proxy Server
6. Implementing Mail Server
7. Implementing Netmeeting
8. Implement TCP/IP using socket programming in Linux

Design based Problems (DP)/Open Ended Problem:

1. Study installation of NS2 and UBuntu on VMWARE. Create a wireless topology using packet tracer. Configure VLAN using packet tracer. Simulate your campus network in NS2 as well as Cisco packet tracer
2. Implement Full duplex chat using TCP/IP
3. Simple TCP/IP client server communication
4. Design a RPC application to add and subtract a given pair of numbers
5. Design a TCP concurrent server to echo given set of sentences .
6. Implementation of file transfer protocol

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.