GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3153204
SUBJECT: Adavanced Network Protocols
SEMESTER – V

Type of course: Professional Core Elective

Prerequisite: Fundamental of Computer networks, basics of Programming

Rationale: The course will provide strong foundation on signals and systems which will be useful for creating foundation of communication and signal processing. The students will learn basic continuous time and discrete time signals and systems. Student will understand application of various transforms for analysis of signals and systems both continuous time and discrete time. Students will also explore effect of sampling on spectrum of signal.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Contents:

Sr. No.	Content	Total Hrs	% Weightage
1	Overview of TCP/IP protocols & Application layer services: HTTP, HTTP-HTTPS, SMTP, FTP, DNS	5	15
2	MAC protocols for high-speed LANS, MANs, and wireless LANs: FDDI, Gigabit ehternet, Wireless Ethernet	6	15
3	**IPv6**: Why IPv6, basic protocol, extensions and options, support for QoS, security, etc., neighbour discovery, auto-configuration, routing. Changes to other protocols. Application Programming Interface for IPv6. 6bone.	6	12
4	ATM : Introduction, basic concepts of ATM, ATM layers, ATM adaptation laye, QoS, IP over ATM	6	12
5	Routing in Internet: Intradomain routing(RIP, OSPF), Interdomain routing(BGP), Mutlicast routing	6	15
6	Network Management and service: Introduction to Network Management, Standard Network Management Protocol	4	7
7	Multimedia over Internet: IP Multicasting, Transmission of Multimedia over the Internet, RSVP, RTP,VOIP	4	10
8	TCP extensions for high-speed networks, Various TCP flavors	5	10
9	Introduction to Software defined Networks: Data Plane, Control Plane, Application Plane, Controller design, Virtualization	3	4
Total		**45**	**100**

Suggested Specification table* with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level

20	**20**	**15**	**5**	**5**	**5**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

**This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary from above table.*

Books:

1. James Kurose and Keith Ross, Computer Networking: A Top-Down Approach, Pearson
2. High-Speed Networks and Internets, Performance and Quality of Service, William Stallings, Pearson
3. TCP/IP Protocol Suite by Behrouz A. Forouzan
4. W. R. Stevens.TCP/IP Illustrated, Volume 1: The protocols,Addison Wesley.
5. G. R. Wright.TCP/IP Illustrated, Volume 2: The Implementation,Addison Wesley.
6. Data Communications and Networking, 5th edition, by Behrouz A. Forouzan

Course Outcomes: Students will be able to

Sr. No.	CO Statement	Marks % Weightage
1	Learn basics network services and its usage	20
2	Understand the differences between local area networks and Internet	20
3	Understand and apply various routing mechanism and Management services in the network	20
4	Understand alternate TCP/IP architecture like ATM also analyze the Quality of service	20
5	Understand multimedia traffic handling and explore current trends in Network technology	20

List of Experiments:

1. DNS utility command understanding: dig, host, nslookup
2. To study about IPv4 and IPv6 addresses.
3. Installation of Linux (MANDRIVA / OPEN SUSE 10 GNOME Tool).
4. Introduction and installation of Network Simulator (NS-2.30).
5. To study about simple TCL example in NS2.
6. Calculate & plot the graph of throughput for simple.tcl by using NS2 (AWK script).
7. To study about TCP Flavors and their comparison in NS2.
8. To create wireless topology for five nodes using NS2.
9. To create wired cum wireless topology using NS2.
10. Introduction to Bluetooth.

Design based Problems (DP)/Open Ended Problem:

1. Router installation and study of specifications and Router configuration of campus/institute
2. Prepare the presentation and report on different network.
3. Learning of Linux commands for network

Major Equipment:

1. Linux based computer system

2. Network simulator software

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.