

ADVANCED TELECOMMUNICATION NETWORKS

(Core Subject/Elective for B Tech)

Course Code:	10M11EC113	Semester:	1 th Semester, M. Tech (ECE) 7 th Semester, B. Tech (ECE)
Credits:	3	Contact Hours:	L-3, T-0, P-0

Course Objectives

1. Understand the fundamental terminology and architecture of data communication, and implementations of data communication.
2. Describe layered communication, the process of encapsulation, and message routing in network.
3. Understand the standards and protocols of data communication.
4. Identify several codes that are used for error detection and how error correction is accomplished. Describe a data link protocol and define how it controls the transfer of frames
5. Apply the knowledge to properly analyze and describe network performance issues.

Course Outcomes

At the end of this course a student should be able to

1. Identify, describe and give examples of the networking applications used in everyday tasks such as reading email or surfing the web.
2. Investigate the solutions to improve wireless network (from physical layer level to transport layer level) and discuss pros and cons.
3. Student will develop an understanding of the underlying structure of networks and how they operate.
4. Analyze the network and issues associated with it.

Course Contents

Unit	Topics	References (chapter number, page no. etc)	Lectures
1.	Data Communication concepts and terminology, Wired vs Wireless, Circuit switching/ Packet switching, Transmission media, Connection oriented/connection less transmission, Errors.	Behrouz A. Forouzan Prakash C Gupta	5
2.	Network Architecture, OSI reference model, TCP/IP architecture, flow control and error control, Error detection and correction. Physical Layer: EIA-232-D	Behrouz A. Forouzan Prakash C Gupta	6
3	Data Link Layer: ARQ protocols – Stop and Wait ARQ, Go back N ARQ, Selective Repeat ARQ Transmission efficiency of ARQ protocols HDLC Data Link control. Random access – ALOHA, slotted ALOHA, CSMA, CSMA-CD and CSMA –CA. 4	Behrouz A. Forouzan Prakash C Gupta	6

4	Wireless LAN: Media Access control in wireless LAN, IEEE 802.11	Behrouz A. Forouzan Prakash C Gupta	5
5	Routing Protocols and Internet Protocols: IPv4-Addressing, Subnetting and Classless Addressing, Classless Inter-domain routing (CIDR). IPv6: Features and Addressing, IPv4 to IPv6 transition,	Behrouz A. Forouzan Prakash C Gupta	8
6	Transport Layer: TCP, UDP, Drawbacks of TCP for Reliable wireless Broadcast/Multicast, Congestion control.	Behrouz A. Forouzan Prakash C Gupta	6
7	Application Layer: DNS, FTP, SMTP and SNMP.	Behrouz A. Forouzan Prakash C Gupta	4
Total Number of Lectures			40

Evaluation Scheme

1. Test 1 : 15 marks
2. Test 2 : 25 marks
3. Test 3 : 35 marks
4. **Internal Assessment** : 25 marks
 - 10 Marks : Class performance, Tutorials & Assignments
 - 10 Marks : Quizzes
 - 5 marks : Attendance

Text Books

1. Data Communication And Computer networks PHI : Prakash C Gupta.
2. Data communications and Networking Pearson Education: Behrouz A. Forouzan.

Reference Books

1. Data and Computer Communications, 9th edition, Pearson: William Stallings.
2. Computer Networks, Pearson Education, 4th edition: A. Tanenbaum.