

EC437 DATA COMMUNICATIONS AND COMPUTER NETWORKS

Course Description & Objectives:

This course will provide all students with the fundamental concepts associated with Data communications and Networks. The course will allow students to become expert in new and evolving areas of Various Networks, Architectures etc.

Course Outcomes:

Upon successful completion of this course, students should be able to:

- a. Independently understand basic computer network technology.*
- b. Understand and explain Data Communications System and its components.*
- c. Identify the different types of network topologies and protocols.*
- d. Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.*
- e. Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.*

UNIT I - Introduction:

Introduction to Data Communications, Protocol architecture, OSI & TCP/IP model, ATM, Transmission medium, Data link layer issues, Circuit Switching, Packet Switching.

UNIT II

Error Detection and Correction, CRC, Checksum, Cyclic Codes, Hamming Code, Framing, HDLC, Ethernet Bridges, Multiplexing, Spread Spectrum.

UNIT III

Network Layer: Routing Algorithms, Flooding, Internetworking ,Internet Protocol- IPv4, IPv6, Aloha in Data Networks.

UNIT IV

Transport Protocols: TCP, UDP, TCP Congestion Control, Techniques to improve QoS, Differentiated Services, QoS in Switched Networks.

UNIT V

Application Layer: DNS, WWW, SNMP, E-mail multimedia, Audio & Video Compression, Voice over IP & Multimedia Support – SIP.

TEXT BOOKS:

1. Data Communications and Networking, Fourth Edition by Behrouza A.Forouzan,TMH.
2. William Stallings, “Data and Computer Communications”, 7th ed.,Pearson Education 2004.

REFERENCES:

1. Computer Networks, A.S.Tanenbaum, 4th edition,Pearson education.
2. Introduction to Data communications and Networking,W.Tomasi,Pearson education.
3. Data and Computer Communications, G.S.Hura and M.Singhal,CRC Press,Taylor and Francis Group.
4. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
5. Understanding communications and Networks, 3rd Edition, W.A.Shay,Cengage Learning.