ECE416:COMMUNICATION NETWORKS

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: Know communication types, network configuration, topologies and hardware

CO2 :: Explain multiple-access protocols for error-free data communication

CO3 :: Examine congestion control policies in networks

CO4 :: Analyze various kinds of routing techniques and algorithms

CO5 :: Evaluate IP addressing protocols and security measures

CO6 :: Infer the role of different types of OSI layers for data transmission

Unit I

Introduction : Data communication, Communication networks, Protocols and protocols architecture, Analog and Digital transmission, Transmission Impairments, Layered Architecture of Computer Networks:OSI and TCP/IP Model

Unit II

Physical Layer : Transmission Media:Guided and wireless medium, Data Encoding:Line coding and transmission modes, Error detection, Error and flow control, Time and Frequency division multiplexing

Unit III

Data Link Layer : Medium Access Control:CSMA,ALOHA, Controlled Access, Ethernet, Wireless LAN, Broadband Wireless, Bluetooth, Circuit and Packet Switching, Connecting Devices

Unit IV

Network Layer : Network Layer Design Issues, Routing Algorithms:Flooding,Shortest path routing,Link state routing,Path vector routing,Broadcast and multicast routing, IP protocol, ARP and RARP, ICMP, DHCP, Network address translation(NAT)

Unit V

Transport Layer : Process to process delivery,Reliable/Unreliable protocol, User Datagram Protocol (UDP), Transport Control Protocol(TCP)

Unit VI

Application Layer : DNS(Domain Name System), Electronic Mail, HTTP, FTP, Multimedia:Audio and Video, Data Compression:Audio and video compression, Recent advances in computer networks, State of the art in communication networks

Text Books:

1. DATA COMMUNICATIONS AND NETWORKING by BEHROUZ A. FOROUZAN, MCGRAW HILL EDUCATION

References:

1. COMPUTER NETWORKS by ANDREW S. TANENBAUM, PEARSON