

Course Title: Data Communication Networks

Course Code: ETEG 303

Credit Hours: 3

Course Description:

This course intend to develop a broad understanding of data communications and networking

Course Contents:

Part I: Data Communication

Unit 1: Data Transmission

Concept and terminology, Analog signals, Analog to digital, Digital to analog

Unit 2: Data Encoding

Digital data, Digital signals, Analog signals, Analog to digital, Digital to analog

Unit 3 : Digital Data Communication Techniques:

Asynchronous and synchronous transmission, Error detecting techniques, interfacing

Unit 4: Data Link Control

Line configuration, Flow control, Error control, Bio-oriented link control

Unit 5: Multiplexing

Frequency division multiplexing (FDM), Time division multiplexing (TDM)

PART II: DATA COMMUNICATION NETWORKING

Unit 6: Communication Networking Technique

Communication networks, Circuit switching, Message switching, Packet switching, Broadcast networks.

Unit 7: Circuit Switching

Digital switching concepts, digital switching devices, the digital private branch exchange, the public telecommunications network

Unit 8: Packet Switching

Virtual circuits and datagram, Routing, traffic control, Error control

Unit 9: Radio and Satellite Networks

Packet radio architecture, Satellite network architecture, Satellite channel access protocols

Unit 10: Local Networks

Local network technology, The Bus/Tree topology the ring topology LAN and WAN, LAN protocol

Unit 11: Computer Communications Architecture

Protocols, the ISO and OSI model, the network interface, Circuit switched network access: X.21, packet-switched network access: X.25, Broadcast network access: LLC, Principle of internetworking, The bridge, X.75, Internet and E-Mail

Unit 12: Integrated Service Digital Network (ISDN)

Overview, Transmission structure, User access, ISDN protocols

References:

1. W. Stallings, *Data and Computer Communications*, Prentice Hall
2. John Freer, *Computer Communications and Networks*, Affiliated East-West Press Pvt. Ltd.