DATA COMMUNICATIONS

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Course Code: 13EC2101

Pre requisites: Communication Systems Basics

Course Objectives:

1. Various methods of data communication circuits.
2. Various protocols of the data communication.
3. Various switching techniques.
4. Digital multiplexing techniques.

Course Outcomes:

After the completion of the course, student will be able to understand the circuits, networks and multiplexing techniques that are used for data communication.

UNIT-I

DATA COMMUNICATION METHODS:

Data Communication Circuits, point-to-point, Multi-point configurations and Topologies, Broadcasting, multicasting configuration, transmission modes, 2-wire and 4-wire operations, Codes, Error detection methods, Error correction methods, Character synchronization.

UNIT-II

SWITCHING TECHNIQUES:

Circuit Switching, Message Switching and Packet Switching principles, Virtual circuit and datagram techniques, X.25 and frame relay.

UNIT-III

DIGITAL MULTIPLEXING:

Multiplexers, Statistical multiplexer, Concentrator, front-end communication processor, Digital PBX, long haul communication with FDM, Hybrid data, TDM, T1, E1 carrier systems, CCITT-TDM carrier system, CODEC chips, Digital hierarchy, LineEncoding, Frame Synchronization.

UNIT-IV
DATA COMMUNICATION PROTOCOLS:

Asynchronous protocols, Synchronous protocols, Bisync Protocol, SDLC, HDLC-Frame format, ATM Frame format, Flow control and error control.

UNIT–V
LINE PROTOCOLS AND CONGESTION CONTROL:

Line protocols: Basic mode, Half-duplex point-to-point protocol, Half-Duplex Multi-Point Protocol, Full-Duplex Protocols, Polling, Roll Call and Hub Polling, Traffic management,Congestion control in packet switching networks and Frame relay.

TEXT BOOKS:

[1] W. TOMASI, "*Advanced Electronic Communications Systems*", PHI.
[2] William Stallings, "*Data and Computer Communications*", 8/e, PEI, 2007.

REFERENCE BOOKS:

[1] T. HOUSELY, "*Data Communications and Teleprocessing Systems*", PHI.

[2] B.A.Forouzon, "*Data and Computer Networking Communications*", 3rd TMH.

[3] B.Gerd Keiser, "*Optical Communications*", PHI.