DATA COMMUNICATIONS

Course Code:15EC2101

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Pre requisites: Communication Systems Basics

Course Outcomes:

CO1: Describe various transmission modes and Network topologies.

CO2: Design Multiplexing techniques such as TDM and FDM.

CO3: Explain Switching systems for data transmission.

CO4: Demonstrate Data communication protocols.

CO5: Comprehend Line Protocols and Congestion Protocols.

UNIT I (10-Lectures)

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 (10-Lectures)

SWITCHING TECHNIQUES:

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

UNIT III (10-Lectures)

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 (10-Lectures)

DATA COMMUNICATION PROTOCOLS:

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

UNIT – V (10-Lectures)

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, 2003.
2. William Stallings, "*Data and Computer Communications*", 8/e, PEI, 2007.

REFERENCE BOOKS:

1. B.A.Forouzon, "*Data Networking Communications and Networking*", 4/e, TMH, 2007.