

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.E Semester: 4 Information Technology

Subject Code 141601

Subject Name DATA COMMUNICATION & NETWORKING

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Sr.No	Course content
1.	INTRODUCTION Why study data communication?, Data Communication, Networks , Protocols and Standards, Standards Organizations
2.	BASIC CONCEPTS Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works
3.	THE OSI MODEL The Model, Functions of the layers, TCP/IP Protocol Suites
4.	SIGNALS Analog and Digital, Periodic and Aperiodic Signals, Analog Signals, Time and Frequency Domains , Composite Signals , Digital Signals
5.	ENCODING AND MODULATION Digital to Digital Conversion, Analog to Digital Conversion, Digital to Analog Conversion, Analog to Analog Conversion
6.	TRANSMISSION OF DIGITAL DATA Digital data transmission, DTE-DCE Interface, Modems, 56K Modems , Cable Modems
7.	TRANSMISSION MEDIA Guided Media, Unguided Media, Transmission Impairments, Performance Wavelength , Shannon Capacity , Media Comparison, PSTN , Switching
8.	MULTIPLEXING Many to one/one to Many, Frequency division Multiplexing, Wave division Multiplexing, Time division Multiplexing, Multiplexing applications
9.	ERROR CORRECTION AND DETECTION Types of Errors, Detection, Parity Check, Vertical Redundancy Check Longitudinal Redundancy Check, Cyclic Redundancy Check, Checksum, Error Correction
10.	LOCAL AREA NETWORKS 802, Ethernet, Other Ethernet Networks, Token Bus , Token Ring FDDI

11.	<b>NETWORKING AND INTERNETWORKING DEVICES</b> Repeaters, Hub, Bridges , Switches, Routers, Gateways Brouters Routing Algorithms, Distance Vector Routin , Link State Routing
12.	<b>UPPER OSI LAYERS</b> Duties of Transport Layer, Duties of Session Layer, Duties of Presentation Layer , Duties of Application Layer

### Reference Books:

1. Data communication & Networking by Bahrouz Forouzan.
2. Data and Computer Communications by William Stallings
3. Computer Networks by Andrew S. Tanenbaum
4. Introduction to Data Communications and Networking By Wayne Tomasi,