

# GUJARAT TECHNOLOGICAL UNIVERSITY

## Information and Communication Technology

### B.E Semester: 4

Subject Code      **141601**  
Subject Name     **Data Communication & Networking**

Sr.No	Course content
1.	<b>Introduction:</b>  Why study data communication?, Data Communication, Networks , Protocols and Standards, Standards Organizations
2.	<b>Basic Concepts:</b>  Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works
3.	<b>The OSI Model:</b>  The Model, Functions of the layers, TCP/IP Protocol Suites
4.	<b>Signals:</b>  Analog and Digital, Periodic and Aperiodic Signals, Analog Signals, Time and Frequency Domains , Composite Signals , Digital Signals
5.	<b>Encoding and Modulation:</b>  Digital to Digital Conversion, Analog to Digital Conversion, Digital to Analog Conversion, Analog to Analog Conversion
6.	<b>Transmission of Digital Data:</b>  Digital data transmission, DTE-DCE Interface, Modems, 56K Modems , Cable Modems
7.	<b>Transmission Media:</b>  Guided Media, Unguided Media, Transmission Impairments, Performance Wavelength , Shannon Capacity , Media Comparison, PSTN , Switching
8.	<b>Multiplexing:</b>  Many to one/one to Many, Frequency division Multiplexing, Wave division Multiplexing, Time division Multiplexing, Multiplexing applications

9.	<b>Error Correction and Detection:</b>  Types of Errors, Detection, Parity Check, Vertical Redundancy Check Longitudinal Redundancy Check, Cyclic Redundancy Check, Checksum, Error Correction
10.	<b>Local Area Networks:</b>  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,

