GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC SEMESTER : VIII
ELECTRONICS & COMMUNICATION ENGINEERING

Subject Name: **DATA COMMUNICATION & NETWORKING**

Subject Code**: X81101**

Sr. No.	Course Contents	Total Hrs
1.	**INTRODUCTION:** Network Hardware, Topology, Network Software, Reference Models, Example Networks, Uses of Computer Networks, ARPANET, Connection Oriented Networks, X.25, Frame Relay, ATM	5
2.	**PHYSICAL LAYER**: The Theoretical Basis for Data Communication, The Public Switched Telephone Network, The Mobile Telephone System	4
3.	**DATA LINK LAYER:** Data Link Layer Design Issues, Error Detection and Correction, Elementary Data Link Protocols, Sliding Window Protocols, Example Data Link Protocols	7
4.	**MEDIUM ACCESS CONTROL SUB LAYER:** The Channel Allocation Problem, Multiple Access Protocols, Ethernet, Wireless LANs, Broadband Wireless, Bluetooth, RFID, Data Link Layer Switching	11
5.	**NETWORK LAYER:** Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Quality of Service, Internetworking, The Network Layer in the Internet.	9
6.	**TRANSPORT LAYER**: The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols: UDP, The Internet Transport Protocols: TCP, Performance Issues, Delay Tolerant Networks.	7
7.	**APPLICATION LAYER**: DNS--The Domain Name System, The World Wide Web, Real-time Audio and Video, Content Delivery and Peer-To-Peer, SMTP and HTTP Protocol	5
8.	**NETWORK SECURITY**: Cryptography, Symmetric-Key Algorithms, Public-Key Algorithms, Digital Signatures, Management Of Public Keys, IPsec, Firewalls, Virtual Private Networks, Wireless Security, Security Issues And Challenges in Wireless Networks, Authentication Protocols, Email Security, Web Security, Social Issues	8

Practical/TW : Practical / Term Work [minimum 8-10 experiments based on above topics.]

Reference Books:
1. Computer Networks, Andrew Tanenbaum, 5th Edition, Pearson Education.
2. Data Communication And Networking, Behrouz Forouzan, 4th Edition, TMH.
3. Introduction to Data Communication and Networking, Wayne Tomasi, Pearson