Course Content

Unit 1	Introduction Concepts	8 hours
Data and Signal fundamentals, Ana log Signals, Digital Signals, Transmission Media: Guided and Unguided Media, Transmission Impairments, Categories of Networks, Network Topology Design - Delay Analysis, Switching methods, ISDN, The OSI reference model ,TCP/IP Protocol Suite, Comparison of OSI and TCP/IP.		

Unit II	Digital and Analog Transmission	8 hours
Digital Transmission: Digital-to-Digital Conversion, Analog-to-Digital Conversion, Pulse Code Modulation, Delta Modulation, Digital-to-Analog Conversion, ASK,FSK,PSK, Analog- to-Analog Conversion, Modulation Techniques.		

Unit III	Medium Access sub layer	8 hours
Medium Access sub layer - Channel Allocations, LAN protocols -ALOHA protocols - Overview of IEEE standards - FDDI. Data Link Layer - Elementary Data Link Protocols, Sliding Window protocols, Error Detection and Correction: Block coding, cyclic codes, Linear block codes, checksum.		

Unit-IV	Network and Transport Layer	8 hours
Network Layer - Point - to Pont Networks, routing, Congestion control, Internetworking -TCP / IP, IP packet, IP address, IPv6. Transport Layer - Design issues, connection management, session Layer-Design issues, remote procedure call. Presentation Layer-Design issues, Data compression techniques, cryptography - TCP - Window Management.		

Unit-V	Application Layer	8 hours
Electronic mail, WWW, HTTP, SMTP, POP3, IMAP, FTP, SSH..		

Unit-VI	Advancements and Research	3 hours
The advances and the latest trends in the course as well as the latest applications of the areas covered in the course. The latest research conducted in the areas covered in the course. Discussion of some latest papers published in IEEE transactions and ACM transactions, Web of Science and SCOPUS indexed journals as well as high impact factor conferences as well as symposiums. Discussion on some of the latest products available in the market based on the areas covered in the course and patents filed in the areas covered in the course.		

Text Books
1. Forouzan, Data Communications and Networking, McGraw Hill, 4th ed.

Reference Books
1. Tannenbaum, Computer Networks, Pearsoned Education.

Suggested Lab Programs:	
1	Implement bit stuffing
2	Implement bit de-stuffing
3	Write a program for hamming code generation for error detection and correction
4	Implement Cyclic Redundancy Check (CRC)
5	Write a program for congestion control using the leaky bucket algorithm
6	Implement Dijkstra's algorithm to compute a shortest path through graph.
7	Take a 64-bit plain text and encrypt the same using DES algorithm
8	Using RSA algorithm encrypt a text data and decrypt the same.
9	Implementation of the link state routing protocols.
10	Implementation of LZW compression and decompression algorithms.