COMPUTER NETWORKS-I

Paper Code	**CEN-503**
Course Credits	**4**
Lectures / week	**3**
Tutorial / week	**1**
Course Description	**UNIT – I**

Introduction: Data Networks, LAN, MAN, WAN, Uses of Computer Networks, LAN Technologies- Transmission, Topologies, Access methods. Network Architecture, Protocol and standards, References Model OSI-ISO, TCP/IP – Overview, IP Address, Classes, Sub-netting, Fundamentals of digital communication, Channel capacity, Bit error rate, Multiplexing Techniques- TDM, FDM, CDMA.

UNIT- II

The Physical Layer: Theoretical basis for Communication , Guided and Unguided Communication media, Communication Satellites, Digital signal encoding Format- NRZ-L, NRZ-I, Manchester, Differential Manchester, Bipolar, 2B1Q. Switching Techniques- Circuit Switching, Message Switching, Packet switching.

UNIT- III

The Data Link Layer: Data Link Layer design issues, Error Detection and Correction, Flow control Protocols, Stop and Wait protocol, Sliding - window Flow control, Error control, stop and wait ARQ, Go-back-N, Selective repeat ARQ, Examples of Data link Protocols- HDLC.

UNIT- IV

The Medium Access Control Sub Layer: The channel allocation problem, ALOHA, Multiple access Protocols, Collision free Protocols, IEEE Standards for LANs and MANs, Bridges, Wireless LANs, IEEE 802.11, Blue tooth, High speed LANs.

UNIT – V

The Network Layer: Network Layer Design issues, Routing Algorithms- Dijsktra's , Bellman-Ford, Link state, Distance vector, Hierarchical Routing. Congestion control Algorithms, Quality of Service, Internetworking, Internet Architecture and Addressing.

References / Text Books:

- B.A. Forouzan, " Data Communication and Networking", TMH, 4TH Edition.
- A.S. Tanebaum, " Computer Networks", 4th Edition Pearson Education.
- W. Stallings, " Data and Computer Communication", 7th Edition , Pearson Education.
- Comer E. Doughlas, " Computer Networks and Internet", 2nd Edition Pearson Education.
- W.R. Stevens, UNIX Network Programming, Vol I, Networking APIs: Sockets and XTI, Pearson Education, 3rd Edition.

Computer Usage / Software Requires:

C++/ JAVA/ MATLAB/ NS2