3/4 B.Tech - SIXTH SEMESTER

EC6T5	**Computer Networks**	**Credits: 3**
Lecture: 3 periods/week		**Internal Assessment: 30 Marks**
Tutorial: 1 period /week Semester		**Semester End Examination: 70 Marks**

Prerequisites: ---

Course Objectives:

- To build an understanding of the fundamental concepts of computer networking.
- To introduce various network models in vogue and to study the network topologies.
- To study the principles of operation of various layers of OSI model in detail.
- To study the TCP/IP and OSI model protocols in detail and their IEEE standards

Learning Outcomes:

Student will be able to

- Master the concepts of networking protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
- Classify various computer network topologies, the working of various layers in OSI model and TCP/IP and their IEEE standards
- Build the skills of sub netting and routing mechanisms.

UNIT-I

Introduction: Uses of Computer Networks, OSI, TCP/IP, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

Physical Layer: Transmission media copper, twisted pair wireless, switching techniques; ISDN and ATM.

UNIT-II

Data link layer: Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Data link layer in HDLC

Medium Access sub layer: ALOHA, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS. Bridges

UNIT-III

Network Layer-Design and Routing: Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing

Network Layer-Congestion control and IP: Rotary for mobility. Congestion control Algorithms. The Network layer in the internet

UNIT-IV

Transport Layer: Transport Services, Connection management, TCP and UDP protocols

UNIT-V

Application Layer: Domain name system, Electronic Mail; the World WEB, Basics of Multi Media.

Learning Resources

Text Books:

1. Computer Networks—Andrew S Tanenbaum,. Pearson Education/PHI, 4th Ed., 2003.
2. Data Communications and Networking–Behrouz A. Forouzan. TMH, 3rd Ed.,2002.

References:

1. An Engineering Approach to Computer Networks-S. Keshav, Pearson Education, 2nd Ed., 2005.
2. Understanding communications and Networks, W.A. Shay, Thomson, 3rd Ed., 2006.

Web resources:

1. http://home.iitk.ac.in/~navi/sidbinetworkcourse/lecture1.ppt
2. http://nptel.iitm.ac.in/courses/IIT-MADRAS/Computer_Networks/index.php