**EC6T6**                          **Computer Networks**                          **Credits: 4**

**Lecture : 4 periods/week**                          **Internal assessment: 30 marks**
**Tutorial: 1 period /week**                          **Semester end examination: 70 marks** -------

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**Course Objectives:**

- 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:**
- To master the concepts of networking protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
- Students will be aware of the various computer network topologies, the working of various layers in OSI model and TCP/IP and their IEEE standards
- Understand and building 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.

**UNIT-II**
**Physical Layer:** Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; ISDN and ATM.

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

**UNIT-IV**
**Medium Access sub layer:** ALOHA, MAC addresses, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS. Bridges

**UNIT-V**
**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

**UNIT-VI**
**Network Layer-Congestion control and IP:** Rotary for mobility. Congestion, Control Algorithms – General Principles – of Congestion prevention policies. The Network layer in the internet

**UNIT-VII**
**Transport Layer:** Transport Services, Connection management, TCP and UDP protocols

**UNIT-VIII**
**Application Layer:** Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

## Learning Resources

**Text Books:**

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

**References:**

1. An Engineering Approach to Computer Networks-S. Keshav, , Pearson Education, 2$^{rd}$ Edition, 2005.
2. Understanding communications and Networks, W.A. Shay, Thomson, 3$^{rd}$ Edition., 2006.