EC-309 **COMPUTER NETWORKS** **L T P C**
4 - - 3

COURSE OBJECTIVES:

1. To understand the concepts of OSI model and protocol architecture
2. To understand the detailed inner workings of TCP/IP protocol suite
3. To understand data link layer design issues and MAC sub layer protocols
4. To understand Network layer design issues, various routing algorithms and congestion control algorithms
5. To understand transport layer protocols and application layer.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. summarize Functionalities of OSI & TCP/IP layers, Data link and MAC protocols , Routing protocols, Congestion control algorithms, TCP, UDP.
2. discover the issues related to data link, medium Access and transport layers by using channel allocation and connection management schemes.
3. choose addresses for networking requirements.
4. identify Network standards â€“ 802.3 and 802.11 for developing computer networks.
5. determine impact of wired and wireless networks in the context of legal, safety and societal issues

UNIT I *Text Book - 1* **(12)**

Uses of Computer networks, Network Hardware, Network Software, Reference Models (OSI and TCP/IP only). **PHYSICAL LAYER :** Introduction to Guided Transmission Media, Wireless Transmission.

UNIT II *Text Book - 1,2* **(12)**

DATA LINK LAYER : Data Link Layer design issues, Elementary Data link Protocols, Sliding window protocols. **MEDIUM ACCESS CONTROL SUBLAYER :** The channel Allocation problem, Multiple Access Protocols, Ethernet, Wireless LANs, Bluetooth, Broadband Wireless, Data Link Layer Switching

UNIT III *Text Book - 2* **(12)**

NETWORK LAYER : Network layer Design Issues, Routing Algorithms - (The Optimality Principle, Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing for Mobile Hosts).

UNIT IV *Text Book - 1* **(12)**

Congestion Control Algorithms, Quality of Service -(Requirements, Techniques for Achieving Good Quality of Service. Internetworking, The Network layer in the internet-(The IP Protocol, IP Address, Internet Control Protocols, OSPF, BGP).

UNIT V *Text Book - 1,2* **(12)**

TRANSPORT LAYER : Elements of Transport Protocols, TCP, UDP, RTP APPLICATION LAYER: DNS, Electronic Mail, The World Wide Web (Architectural Overview only) Multimedia.

LEARNING RESOURCES:

TEXT BOOK(s):

1. A.S Tanenbaum - Computer Networks, 4th Edition, PHI, 2003.
2. Behrouz A. Foruzan - Data communication and Networking, 4th edition, TMH, 2004.

REFERENCE BOOK(s):

1. James F.Kurose,Keith W.Ross - Computer Networking A Top Down Approach, 3rd Edition, Pearson education.
2. Larry L.Peterson and Bruce S.Davie - Computer Networks A Systems Approach, 4th Edition, Morgan Kaufmann Publishers,2007

WEB RESOURCES:

http://nptel.ac.in/courses/106105081/1