

(IT613) ADVANCED COMPUTER NETWORKS

(ELECTIVE - I)

Objective of the Course :

The objectives of this course are twofold; first, introduce you the fundamental techniques/principles of Computer Networking and second, develop the skills for state of the art research in advance networking technologies.

UNIT - I

Introduction to computer networks, Internet architecture, MAC and LLC Issues: Techniques for multiple access, Adaptive LLC mechanisms for wireless links, Ethernet/Fast Ethernet

UNIT - II

Internet Routing Architecture: Internet Service Providers and Peering, Border Gateway Protocol (BGP), Open Shortest Path First, Multicast routing, Scalable Multicast routing, Protocol Independent Multicast (PIM), Scalable Reliable Multicast

UNIT - III

QoS architecture, Fair queuing, Integrated Services, Differentiated Services, Resource Reservation Protocol (RSVP), Transport TCP, UDP, TCP congestion control and variants, TCP RTT estimation, Fast retransmit, Fast recovery, Wireless TCP Random Early Detect (RED) Basics in Cryptography and Security, Distributed Denial of Service, Domain Name System (DNS), FTP, HTTP etc,

UNIT - IV

Overlay Networks, Peer-to-Peer Networks, ATM Protocol Architecture, Traffic Engineering, Multi-Protocol Label Switching (MPLS), IP Next generation, IPv6, IP Next Layer (IPNL), Mobile IP

UNIT - V

Advanced networking technologies: WLAN, WPAN/Bluetooth, Wireless Sensor Networks, Ad hoc Networks.

TEXT BOOK :

1. J. Kurose and K. Ross, "Computer Networking – A Top-Down Approach Featuring the Internet", 3rd ed., Addison-Wesley, 2004.

REFERENCES BOOKS :

1. Andrew S. Tanenbaum, "Computer Networks", 4th ed., Prentice Hall, 2003,
2. W. Stalling , "Wireless Communication and Networks", 3rd ed., Pearson Education, 2007.
3. Carlos Cordeiro and Dharma P. Agrawal, "Ad hoc and Sensor Networks - Theory and Applications", 1st ed., World Scientific Publications, 2006.