

# CSE306:COMPUTER NETWORKS

L:3 T:0 P:0 Credits:3

**Course Outcomes:** Through this course students should be able to

- CO1 :: define network topologies, models and functionalities of different layers
- CO2 :: explain data communication, transmission media and modulation at physical layer
- CO3 :: identify error handling and use of multiple access protocols in a network.
- CO4 :: demonstrate the concepts of classful and classless ip addressing scheme
- CO5 :: analyze various routing protocols and congestion control mechanisms
- CO6 :: illustrate the services provided by transport and application layer

## Unit I

**INTRODUCTION** : Network software architecture and its layers and protocols, Network hardware architecture and its topologies and device like HUB, Switch and Routers, Uses of Computer Networks, Networks and Types, Introduction to internet, browser, web server, URL, domain name, IP address, packets

**NETWORK MODELS** : Protocol Layering, TCP/IP protocol suite, OSI Model

## Unit II

**PHYSICAL LAYER: Signal & Media** : Basics for Data Communications and Analog and Digital signals, Transmission Impairments and Performance, Data Rate, Transmission media like Guided and Unguided media, Cabling standards

**PHYSICAL LAYER: Modulation & Multiplexing** : Digital to Digital Conversion, Analog to Digital Conversion, Analog to Analog conversion, Digital to Analog conversion, Multiplexing

## Unit III

**DATA LINK LAYER** : Data link Layer design issues, Elementary Datalink Protocols, Error Detection and Correction- Hamming code, CRC, Parity, Checksum, Switch working

**MAC SUBLAYER** : Multiple Access Protocols- ALOHA, CSMA and CSMA/CD, Random Access, Controlled access, Ethernet protocol

## Unit IV

**NETWORK LAYER: IP Addressing** : Network layer design issue, IP Addressing Both Classfull and Classless, Subnetting and Supernetting, Subnetting examples, Network layer services, Network layer performance, Forwarding of IP packets, IP Header, IPv6 addressing

## Unit V

**NETWORK LAYER: Routing** : Routing Algorithm-Shortest path algorithm, Distance vector Routing, Link State routing, Routing algorithms, Unicast routing protocols

**NETWORK LAYER: Congestion Control** : Congestion Control Algorithms

## Unit VI

**TRANSPORT LAYER** : Transport Layer Services, TCP- Header format and handshaking operation, UDP- Header format

**APPLICATION LAYER** : Domain Name System, E Mail, FTP

## Text Books:

1. DATA COMMUNICATIONS AND NETWORKING WITH TCPIP PROTOCOL SUITE by BEHROUZ A. FOROUZAN, Tata McGraw Hill, India

## References:

1. COMPUTER NETWORKS by ANDREW S. TANENBAUM, PEARSON

