

Objective:

This course addresses the principles, architectures and protocols that have gone into the development of the Internet and modern networked applications. The course examines network design principles, underlying protocols, technologies and architectures such as naming, data transport, routing and algorithms for networked applications including messaging, encryption and authentication.

Theory:**UNIT I**

The importance of Networking, Types of Networking, Network Topology, Transmission Media, Data communication: Concepts of data, signal, channel, bandwidth, bit-rate and baud-rate; Maximum data-rate of channel; Analog and digital communications, asynchronous and synchronous transmission.

UNIT II

Network adapters card, Multiplexer (FDM, TDM, STDM), Hub, Repeater. Network References Models: Layered architecture, protocol hierarchies, interface and services.

UNIT III

ISO-OSI references model, TCP/IP reference model; Data link layer function and protocols: Framing, error-control, flow control; sliding window protocol; HDLC, SLIP and PPP protocol, datagram structures

UNIT IV

Network layer - routing algorithms, congestion control algorithms; Internetworking: bridges and gateway; Transport layer - connection management, addressing; Flow control and buffering, multiplexing

UNIT V

Session layer – RPC; Presentation layer - abstract syntax notation, Application layer - File Transfer Protocol (FTP), Telnet, Simple Mail Transfer Protocol(SMTP); World Wide Web(WWW) - Wide Area Indexed Servers (WAIS), WAP; Network Security; Data compression and cryptography.

Reference books:

1. Arick, M.R. 1994. The TCP/IP Companion - A Guide for Common User. Shroff Publishers and Distributors Pvt. Ltd., Mumbai.
2. Freer, J. 1990. Computer Communication and Networks. Affiliated East West Press, New Delhi.
3. Hayes, J. 2001. Modelling and Analysis of Computer Communication Networks. Khanna Publishers, New Delhi.
4. Tanenbaum, A.S. 2003. Computer Networks, Prentice Hall of India, New Delhi.