COMPUTER NETWORKS
(Common to CSE, IT & ECE)

Course Code :13CT1124	L	T	P	C
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Course Educational Objectives:

To make the student learn the design of computer networks.

❖   Basics of Computer Networks and different Transmission Media.

❖ Giving idea about Design issues in framing.

❖ Giving idea about Design issues in Routing Algorithms.

❖ Giving idea about Design issues in transport protocols.

❖ Giving idea about Design issues in Domain Name Systems and SNMP.

Course Outcomes:

At the end of the course the student will be able to

❖   Understand the Network Models and Physical Layer.

❖   Understand the data link layer and medium access sub layer.

❖   Understand the Network Layer and Congestion Control.

❖   Understand the Transport Layer.

❖   Understand the concepts and their implementation in Application Layer.

UNIT-I   (12 Lectures)

NETWORK MODELS:

Layered Tasks, WAN, LAN, MAN, OSI model, TCP/ IP protocol stack, addressing (Text book 2), Novell Networks Arpanet, Internet. (Text book 1).

PHYSICAL LAYER:

Transmission media: copper, twisted pair, wireless; switching and encoding asynchronous communications; Narrow band ISDN, broad band ISDN and ATM. (Text book 1)

UNIT-II   (12 Lectures)

DATA LINK LAYER:

Design issues, framing, error detection and correction, CRC, Elementary data link protocols, Sliding Window Protocol, Slip, HDLC, Internet, and ATM.

MEDIUM ACCESS SUB LAYER:

Random access, Controlled access, Channelization, IEEE 802.X Standards, Ethernet, wireless LANS, Bridges. (Text book 2)

UNIT-III   (12 Lectures)

NETWORK LAYER:

Network Layer Design Issues, Routing Algorithms, Internetworking, Network Layer in Internet.(Text book-1)

CONGESTION CONTROL:

General Principles, policies, traffic shaping, flow specifications,

Congestion control in virtual subnets, choke packets, loads shedding, jitter control.(Text book-2)

UNIT-IV   (13 Lectures)

TRANSPORT LAYER: Transport Services, Elements of Transport Protocols, Internet Transport Protocols (TCP & UDP); ATM AAL Layer Protocol.(Text book-1)

UNIT-V   (11 Lectures)

APPLICATION LAYER:

Network Security, Domain name system, SNMP, Electronic Mail: the World WEB, Multi Media.

TEXT BOOKS:

1. Andrew S Tanenbaum , *"Computer Networks"*, 6th Edition. Pearson Education/PI, 2012.

2. Behrouz A. Forouzan , *"Data Communications and Networking"*, 4th Edition TMH, 2012.

REFERENCES:

1. S.Keshav, *"An Engineering Approach to Computer Networks"*, 2nd Edition, Pearson Education, 2001.

2. William, A. Shay , *"Understanding communications and Networks"*, 3rd Edition, Thomson Publication, 2006

WEB REFERENCES:

1. http://nptel.iitm.ac.in/courses/Webcoursecontents/ IIT%20Kharagpur/Computer%20networks/New_index1.html

2. http://nptel.iitm.ac.in/courses/IIT-MADRAS/ Computer_Networks/index.php