

## COMPUTER NETWORKS

(Common to CSE & IT)

Course Code: 15CT1124

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### Course Outcomes :

At the end of the Course, the Student will be able to:

- CO 1** Explain Network Models.
- CO 2** Compute error detection and correction codes.
- CO 3** Discuss routing algorithms.
- CO 4** Differentiate TCP and UDP protocols.
- CO 5** Students should be able to know security protocols

### UNIT-I (10 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. (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, and HDLC.

#### MEDIUM ACCESS SUB LAYER:

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

**UNIT-III****(11 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****(10 LECTURES)****TRANSPORT LAYER:**

Transport Services, Elements of Transport Protocols, Internet Transport Protocols (TCP & UDP); ATM Reference model. (Text book 1)

**UNIT-V****(7 LECTURES)****APPLICATION LAYER:**

Network Security, Domain name system, SNMP, Electronic Mail: (SMTP, POP3,IMAP, MIME)

**TEXT BOOKS:**

1. Andrew S Tanenbaum ,”Computer Networks”, 6<sup>th</sup> Edition. Pearson Education / PI, 2012.
2. Behrouz A. Forouzan ,”Data Communications andNetworking”, 4<sup>th</sup>Edition TMH, 2012.

**REFERENCES:**

1. S.Keshav, “An Engineering Approach to Computer Networks”, 2<sup>nd</sup>Edition, Pearson Education, 2001.
2. William, A. Shay , “Understanding communications and Networks”, 3<sup>rd</sup>Edition, Thomson Publication, 2006

**WEB REFERENCES:**

1. [http://nptel.iitm.ac.in/courses/Webcoursecontents/IT%20Kharagpur/Computer%20networks/New\\_index1.html](http://nptel.iitm.ac.in/courses/Webcoursecontents/IT%20Kharagpur/Computer%20networks/New_index1.html)
2. [http://nptel.iitm.ac.in/courses/IIT-MADRAS/Computer\\_Networks/index.php](http://nptel.iitm.ac.in/courses/IIT-MADRAS/Computer_Networks/index.php)