

# 17HS062 COMPUTER NETWORKS

## Course Objectives

1. To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
2. To get familiarized with the basic protocols of computer networks.

## Course Outcomes

After this course, the student will be able to

1. Identify the different components in a Communication System and their respective roles.
2. Describe the technical issues related to the local Area Networks
3. Identify the common technologies available in establishing LAN infrastructure.

## UNIT – I

**Introduction:** Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

**The Physical Layer:** The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network

## UNIT – II

**The Data Link Layer:** Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

**The Medium Access Control Sub-layer:** The channel allocation problem, **Multiple Access Protocols, Ethernet**, Data Link Layer Switching.

## UNIT – III

**The Network Layer:** Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service.

Internet Working, The Network Layer in the Internet

## UNIT – IV:

**The Transport Layer:** The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay Tolerant Networks.

**UNIT – V:**

**The Application Layer:** DNS – The Domain Name System, Electronic Mail, The World Wide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

**Reference Books:**

1. Andrew S. Tanenbaum, “Computer Networks”, Fifth Edition, Pearson Education.
2. Bhushan Trivedi, Computer Networks , Oxford University Press
3. James F.Kurose, Keith W.Ross, “Computer Networking”, Third Edition, Pearson Education
4. Behrouz A Forouzan, “Data Communications and Networking”, Fourth Edition, TMH (2007).
5. Kurose & Ross, “**COMPUTER NETWORKS**” – A Top-down approach featuring the Internet”, Pearson Education – Alberto Leon – Garciak.

**Student Activity:**

1. Study the functioning of network devices available in your organization .
2. Prepare a pictorial chart of LAN connections in your organization