

**Version No.:** 1.10

**Prerequisite:** ECE305 Digital Communication

**Objectives:**

- To make the students to understand the different layers of ISO Network
- To understand the concept of Networking.
- To get to know the connectivity's and how to interface with network.

**Unit I Data Communication**

Evolution of data Networks – Switching Techniques – Network Topologies – Categories of Networks – ISO/OSI Reference Model – TCP/IP Model – Inter Networking Devices – Repeaters – Hubs – Switches – Bridges: Transparent and Source Routing Bridges – Routers.

**Unit II Data Link Layer**

Logical Link Control – Error Detection Techniques – ARQ protocols – Framing – HDLC – Point to Point protocol.

Medium Access Control – Random access Protocols – Scheduling approaches to MAC.

**Unit III Local Area Networks**

Ethernet – Token Bus – Token Ring – FDDI – Virtual LAN – Wireless LAN.

**Unit IV Network Layer**

Internetworking – IP Addressing – Subnetting – Ipv4 and IPv6 – Routing – Distance Vector and Link State Routing – Routing Protocols.

**Unit V Transport Layer and Application Layer**

Connection oriented and Connectionless Service – User Datagram Protocol – Transmission Control Protocol – Congestion Control – Application Layer Protocols: DNS, SMTP, FTP, HTTP and World Wide Web.

**Textbooks:**

1. Alberto Leon-Garcia, “Communication Networks” Tata McGraw-Hill 2005.

**Reference Books:**

1. Robert Gallager, “Data Networks”, Prentice Hall, 2004.
2. W. Stallings, Data and Computer Communications, Prentice Hall, 2004.
3. Fred Halsall, Data communications, “Computer Networks and Open systems”, Addison Wesley 2000.

**Mode of Evaluation:** CAT- I & II, Quizzes, Assignments/ other tests, Term End Examination.

**List of Experiments:**

1. Demonstrate the implementation of Token Ring Network and Examine
2. The performance under different Scenarios using OPNET
3. Demonstrate the implementation of Ethernet Network and Examine
4. The performance under different Scenarios using OPNET
5. Simulation of TCP Protocol using NS-2
6. Designing a simulation model using NS-2 to analyze various aspects of the Internet
  - a. Protocol.
7. Simulation of ATM network using NS-2