- **Sem.** : 4
- **Subject Code** : 05BC1403
- **Subject** : Computer Networks
- **Course Objectives** :
  1. To introduce the basics of Computer Networks.
  2. To understand the functionality of each layer of OSI and TCP/IP models and interactions between them.
  3. To understand deeply the work of each layer of TCP/IP model.
  4. To gain basic insight of programming for network solutions.
  5. To analyze network through networking commands.
- **Prerequisites** : Basic knowledge of Linux OS

Unit No	Topics Covered	No of lectures required
1	**Introduction to Computer Networks** Introduction to computer networks, concepts of layering, categories of network, wired and wireless components of network, Data communication fundamentals: Introduction, Bandwidth and data rate, analog & digital signaling and transmission, Modulation, Multiplexing and De-Multiplexing, switching and routing, Network Topologies	10
2	**The Physical Layer & Data Link Layer** Introduction, Duties of physical layer, Wired and wireless physical layer, The duties of data link layer, Error Handling Mechanism, The Protocols (Go Back N, Selective Repeat)	13
3	**The Medium Access Sub Layer & The Network Layer** Introduction to MAC, Ethernet, types of Ethernet, Introduction, Duties of Network Layer	10

4	**The Transport Layer & The Application Layer** Introduction, Duties of Transport layer, Introduction, DNS, Registration Process, The Name servers, resource records, Email Service, HTTP, DHCP, FTP	10
5	**Network Utilities** Commands related to networking Ipconfig, netstat, tracert, ping, pathping, telnet,route, ARP,Hostname, NSLookup	05

- **Course Outcomes**

1. Explain basics of Computer Networks and functionality of each layer of OSI and TCP/IP models.
2. Compare difference between OSI and TCP/IP model.
3. Apply error-detection and error-correction techniques to provide better security
4. Apply insight of programming for network solutions.
5. Compare different protocols for data transmission.

- **Course Outcomes – Program Outcomes Mapping Table :**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	H	H			H						H
CO2	H		M								L
CO3	H	H	H		H						M
CO4	H	H	H		H						H
CO5	H	H			M		H	H			M

- **Text Book :**

1. Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, Fourth Edition

- **Reference Books :**

1. Andrew S. Tanenbaum,"Computer Networks", Prentice Hall, Fourth Edition
2. Computer Networking and the Internet (5th edition),Fred Halsall, Addison Wesley
3. Bhushan H Trivedi ,"Computer Networks", Oxford University Press

- **Web References :**
  1. https://www.javatpoint.com/computer-network-tutorial
  2. https://www.tutorialspoint.com/data_communication_computer_network/index.htm
- **App References :**
  1. The Network Handbook
  2. Computer Networking Concepts

- **Syllabus Coverage from text /reference book & web/app reference:**

Unit No	Chapter Numbers
1	1,2,3
2	7,10,11
3	12,13,19
4	23,24,25,26,27
5	https://www.tecmint.com/