

III- Year I- Semester	Name of the Course	L	T	P	C
PC3103	Computer Networks	3	0	0	3

Course Objectives:

1. To summarize OSI and TCP/IP reference models and Example networks, characteristics of transmission media and classify multiplexing techniques
2. To Compute the Error detecting and Flow control Algorithms
3. To illustrate IEEE LAN,MAN and WAN protocols
4. To Compute optimal path using Routing Algorithms
5. To explain the knowledge on various application layer protocols

Syllabus:

UNIT-I: Introduction to Computer Networks and Physical Layer

Introduction: Network Topologies WAN, LAN, MAN. Reference models- The OSI Reference Model- the TCP/IP Reference Model - A Comparison of the OSI and TCP/IP Reference Models, Example Networks, Physical Layer – Fourier analysis – Bandwidth Limited Signals – The Maximum Data Rate of a Channel Guided Transmission Media, Multiplexing: Frequency Division Multiplexing, Time Division Multiplexing, and Code Division Multiplexing

UNIT-II: Data Link Layer

Data Link Layer Design Issues, Error Detection and Correction, Elementary Data Link Control Protocols, Sliding Window Protocols, HDLC, PPP, Channel Allocation problem, Multiple Access Protocols, IEEE standards for Local Area Networks, WLAN, Bluetooth

UNIT– III: Network Layer

Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Internet Protocol Header, IP Addresses, subnetting and super netting.

UNIT-IV: Transport Layer

Transport Layer Design Issues, Connection Establishment, Connection Termination, Transport and User Datagram Protocols

UNIT – V: Application Layer

Design Issues, DNS, WWW, HTTP/HTTPS, E-mail, FTP

Text Books:

1. Computer Networks, Andrew S Tanenbaum, Pearson, 5th Edition
2. Data Communications and Networking, Behrouz A Forouzan, Tata McGraw Hill, 4th Edition

Reference Book:

1. TCP/IP Protocol Suite, Behrouz A Forouzan, Tata McGraw Hill Edition, 3rd Edition

Web Resources:

1. <https://youtube.com/playlist?list=PLbRMhDVUMngfpeFloB7kyiA40EptH1up>
2. <https://www.geeksforgeeks.org/computer-network-tutorials/>
3. <https://www.cisco.com/c/en/us/support/docs/ip/routing-information-protocol-rip/13788-3.html>
4. <https://nptel.ac.in/courses/106105081>

Course Outcomes: By the end the of the course, the student will be able to

- CO1:** Explain OSI and TCP/IP reference models and Example networks, characteristics of transmission media and classify multiplexing techniques (L2)
- CO2:** Summarize various Error Control and Flow Control techniques (L2)
- CO3:** Identify Channel Allocation problems and IEEE protocols w.r.t LAN, WLAN. (L1)
- CO4:** Compute optimal path using Routing Algorithms and Design the sub networks(L4)
- CO5:** Illustrate the working of various Transport and application layer protocols (L3)