



SYLLABUS

Course Title	Computer Networks
Course Code	MIT105
Course Credit	Theory(Hrs) : 4
	Practical(Hrs) : 2
	Tutorial(Hrs) : 0
	Credits : 5

Course Objective

Networking is the key technology for collecting, processing and gathering information. Due to rapid growth of Internet and organizations which uses various networking topology learning of various networking technologies and various networking algorithms and strategies is must today.

Detailed Syllabus

Sr. No.	Name of chapter & details	Hours Allotted
Section – I		
1	Introduction: Overview of Computer Networks, seven-layer architecture, ISO-OSI and TCP/IP reference models, Comparison of OSI and TCP/IP model, LAN, MAN, WAN, Wireless LAN.	05
2	The Physical Layer: Guided and unguided transmission media, Public Switched Telephone Network (PSTN).	05

3	The Data Link Layer: Design Issues: Framing, Error control, Flow control, Error detection and correction, Elementary data link protocols: Simplex, stop and wait, Sliding window protocol, HDLC.	08
4	The Medium Access Control (MAC) Sub Layer: The channel allocation problem, Multiple Access protocols: ALOHA, CSMA, Collision Free Protocols, Limited Contention Protocols, Wavelength Division Multiple Access Protocols, Wireless LAN protocols, Ethernet.	08
Section – II		
5	The Network Layer : Store and forward packet switching, Service provided to transport layer, Implementation of connection oriented and connection less service, Comparison of virtual circuit and datagram subnets, Routing algorithms, The Optimality principle, Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Routing for mobile host, ,Congestion control algorithms principles, Prevention policies, Congestion control in virtual circuit subnets, Congestion control in datagram subnets, Load shedding, Jitter control, Quality of Service requirements, Techniques for achieving good quality of service, Tunneling, Fragmentation, The IP protocol, IP addresses, OSPF, BGP, IPv6.	12
6	The Transport Layer: Transport service primitives, Elements of Transport Protocols: Connection establishment, Connection release, Flow control, Multiplexing, Crash recovery the transport protocol: UDP, RTP, TCP.	06
7	The Application Layer: DNS, SMTP, POP3, WWW, FTP.	04

Instructional Method and Pedagogy:

- Lectures will be conducted with the aid of multi-media projector, blackboard, OHP etc. Assignments based on course contents will be given to the students at the end of each unit/topic and will be evaluated at regular interval
- Minimum five experiments shall be there in the laboratory related to course contents

Course Learning Outcomes:

On the completion of the course, students will be able to:

- **Understand** the concepts of data communications and networking
- **Understand** the structure of various reference model
- **Understand** the concept of error handling mechanisms in various network occurs during transmission.
- **Understand** the concepts of various routing strategies used in communication
- **Understand** working of higher layers.

Text book:

- Computer Network, Andrew S. Tanenbaum, Pearson Education

Reference Books:

- Introduction to data communication and networking, Behrouz Forouzan, TMH.
- Data and computer communication, William Stallings, Pearson.
- Computer Networks, Bhusan Trivedi, Oxford Higher Education.

Additional Resources

- Requests for Comments (RFCs) & Internet Drafts, published by Internet Engineering Task Force (www.rfceditor.org).
- Journals:
IEEE Journal on Selected Areas in Communications, IEEE Transactions on Communication, ACM/IEEE Transactions on Networking.