M. Sc. (IT) – 1st Year
Semester-II

Syllabus of
Subject Code: 210801202
Subject Name: Computer Communication and Networking

Course Objective:

- To make students learn fundamentals of networking.
- To understand the functionality of each layer of the OSI reference model and
- TCP/IP models.
- To understand the interaction and type of services exchanged between each layer.
- To gain insight in how to develop a program related to computer networks.

Course Duration:

The course will have sessions which are divided into five modules. Each module consists of 10 sessions of 60 minutes each and carries 20% marks weightage.

Course Content:

Module No.	Topics/Chapter Name	No. of Sessions	% Weightage
I	**Introduction** Internetworks,Network Software, Reference Models, A comparison of OSI/TCP IP Model. **The Physical Layer** The Maximum Data Rate of a Channel, Guided Transmission Media, Wireless Transmission, Digital Modulation and Multiplexing	**10**	**20%**
II	**The Data Link Layer** Data Link Layer Design Issues, Error Detection and Correction, Elementary Data Link Protocols, Sliding Window Protocols	**10**	**20%**
III	**The Medium Access Control** The Channel Allocation Problem, Multiple Access Protocols, Ethernet, Wireless LANS **The Application Layer** Domain Name System, Content Delivery.	**10**	**20%**
IV	**The Network Layer** Network Layer Design Issues, Routing Algorithms (The Optimality Principle, Shortest Path Algo, Distance Vector Routing, Link State Routing), Internetworking, The Network Layer in the Internet (IP Addresses, Classful	**10**	**20%**

	Addressing, Subnets, Introduction to IPv6, ICMP, NAT, ARP)		
V	**The Transport Layer** The Transport service (Services provided to the upperlayers, Transport Service Primitives), Elements of Transport Protocols (Addressing, Connection Establishment, Connection Release), Internet Transport Protocols (Introduction to UDP), Internet Transport Protocols (Introduction to TCP, TCP Service Model, The TCP Protocol, The TCP Segment Header,TCP Connection Establishment, TCP Connection Release, TCP Connection Management Modeling, TCP Sliding Window)	**10**	**20%**

Teaching Methods:

The following pedagogical tools will be used to teach this course:

1. Lectures & Discussions
2. Assignments
3. Case Studies

Evaluation:

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

1.	Continuous Evaluation (Assignment / Presentation / Quiz / Class Participation)	30% (Internal Assessment)
2.	Internal Examination (Mid Semester Exam)	20% (Internal Assessment)
3.	External Examination (University Exam / End Semester Exam)	50% (External Assessment)

Basic Text Book:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
T1	Andrew S. Tanenbaum David J. Wetherall	Computer Networks	Pearson	5th Edition

Topic Distribution:

Module No.	Topics/Chapter Name	No. of Sessions	% Weightage
I	Chapter 1: 1.2.5, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.5, 1.4.1, 1.4.2, 1.4.4 Chapter 2: 2.1.3, 2.2.5, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5, 2.5.2, 2.5.3, 2.5.4, 2.5.5	**10**	**20%**
II	Chapter 3: 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.3.1, 3.3.2, 3.3.3, 3.4.1, 3.4.2, 3.4.3	**10**	**20%**
III	Chapter 4: 4.1.1, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.5, 4.3.1, 4.3.2,	**10**	**20%**

	4.3.4, 4.3.5, 4.3.6, 4.3.7, 4.4.1, 4.4.2, 4.4.3, 4.4.4 Chapter 7: 7.1.1, 7.1.2, 7.1.3, 7.5.1, 7.5.2, 7.5.3		
IV	Chapter 5: 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.2.1, 5.2.2, 5.2.4, 5.2.5, 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5, 5.6.2, 5.6.3, 5.6.4	**10**	**20%**
V	Chapter 6: 6.1.1, 6.1.2, 6.2.1, 6.2.2, 6.2.3, 6.4.1, 6.5.1, 6.5.2, 6.5.3, 6.5.4, 6.5.5, 6.5.6, 6.5.7, 6.5.8	**10**	**20%**

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Behrouz A. Forouzan	Data Communications and Networking	Tata Mcgraw-Hill	Latest
2	James F. Kurose Keith W. Ross	Computer Networking: A Top-Down Approach	Pearson	Latest
3	Bhushan Trivedi	Computer Networks	Oxford Higher Education	Latest
4	**Video Links :** 7. http://www.nptelvideos.com/lecture.php?id=5712 8. http://www.nptelvideos.com/lecture.php?id=5713 9. http://www.nptelvideos.com/lecture.php?id=5726 10. http://www.nptelvideos.com/lecture.php?id=5737 11. http://www.nptelvideos.com/lecture.php?id=5724			