

Subject Code: 1ET1100304	Subject Title: Network Basics
Prerequisite	Operating System

Course Objective: To understand the basic concepts of computer network and firm foundation for understanding how data communication occurs using computer networks. It is based around the OSI Reference Model which deals with the major issues and related protocol studies in the various layers (Physical, Data Link, Network, Transport, Session, Presentation and Application) of the model. This course provides the student with fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area. The course will be driven from the engineering perspective.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	1	2	5	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Introduction to computer networks and Internet: Understanding of network and Internet, The network edge, The network core, Understanding of Delay, Loss and Throughput in the packet-switching network, protocols layers and their service model, History of the computer network	8	20
2	Application Layer: Principles of computer applications, Web and HTTP, E-mail, DNS, Socket programming with TCP and UDP	6	15
3	Transport Layer: Introduction and transport layer services, Multiplexing and Demultiplexing, Connection less transport (UDP), Principles of reliable data transfer, Connection oriented transport (TCP), Congestion control.	10	25
4	Network Layer: Introduction, Virtual and Datagram networks, study of router, IP protocol and addressing in the Internet, Routing algorithms, Broadcast and Multicast routing	10	25
5	The Link layer and Local area networks: Introduction and link layer services, error-detection and correction techniques, Multiple access protocols, addressing, Ethernet, switches.	6	15

Course Outcome:

After successful completion of the course students should be able to:

1. Analyze the requirements for a given organizational structure and select the most appropriate networking Architecture and technologies;
2. Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols;
3. Analyze, specify and design the topological and routing strategies for an IP based networking infrastructure
4. Have a working knowledge of datagram and internet socket programming

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Analyze the requirements for a given organizational structure and select the most appropriate networking Architecture and technologies	Understanding, Analyzing
CLO2	Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols.	Understanding, Applying

CLO3	Analyze, specify and design the topological and routing strategies for an IP based networking infrastructure.	Applying, Analyzing
CLO4	Have a working knowledge of datagram and internet socket programming	Analyzing, Evaluating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	H	M	H	M	L	L	M	H	M	M	H	M	L	L
CLO2	M	H	H	M	M	H	L	L	M	M	L	L	H	H	M	M
CLO3	H	H	M	H	M	M	M	L	M	L	M	M	H	H	M	M
CLO4	M	H	M	H	M	H	L	L	M	M	M	L	M	H	M	H

List of Book References:

1. Computer Networking- A Top-Down approach, 5th edition, Kurose and Ross, Pearson
2. Computer Networks (4th edition), Andrew Tanenbaum, Prentice Hall
3. Computer Networking and the Internet (5th edition), Fred Halsall, Addison Wesley
4. Data Communications and Networking (4th edition), Behrouz Forouzan, McGraw Hill
5. TCP/IP Protocol Suite (3rd edition), Behrouz Forouzan, McGraw Hill

E-Resources / Web Links:

1. <http://williamstallings.com/DataComm/>
2. <http://www.cs.vu.nl/~ast/>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. To study transmission media.
2. To study networking devices.
3. Demonstrate configure of networking OS, NIC, Cable etc.
4. To study and test the networking commands.
5. Demonstrate connection of two networking machine (Peer to Peer communication)
6. Demonstrate connection of more than two networking machines.
7. To study client-server architecture.
8. Demonstrate the configuration of the FTP.
9. To study WWW structure and Web Browser
10. Demonstrate configuration of the Web server.
11. To discover and use any one networking tool for network traffic.