

503006	COMPUTER NETWORKS				L	T	P	C
					3	0	0	3
Programme:	B.E - CSE			Sem:	4	Category:		CS
Prerequisite:	Basic idea about computers							
Aim:	To introduce the concepts, terminologies and technologies used in modern days' data communication and computer networking.							
Course Objectives:								
1	To understand the concepts of physical layer							
2	To study the concepts of data link layer							
3	To introduce function with network layer							
4	To make the students get familiarized with transport lyer							
5	To study the concepts of application layer							
Course Outcomes: The students will be able to								
CO1:	Understand the basic concepts of Physical Layer and its functions							
CO2:	Understand the concept of Data Link Layer and its functions							
CO3:	Analyze the various methods in network layer and its functions.							
CO4:	Analyze the different techniques on Transport layer and its functions							
CO5:	Understand the concept of various methods in Application layer							

COURSE OUTCOMES VS PROGRAM OUTCOMES MAPPING:

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	2	2	2	2							3	2	
CO 2	3	2	2	2	2							3	2	
CO 3	3	2	2	2	2							3		2
CO 4	3	2	2	2	2							3		2
CO 5	3	2	2	2	2							3		2

Enter correlation levels 1, 2 & 3 define as: 1-low, 2- medium, & 3-high

UNIT – I	INTRODUCTION AND PHYSICAL LAYER	Hrs
Introduction: Data Communication-Network types - Reference models: The OSI reference model – The TCP/IP reference model - The Physical layer: Data and Signals-Periodic Analog Signals – Digital Signals-Transmission Impairments-Digital Transmission-Analog transmission		9
UNIT - II	DATA LINK LAYER	Hrs
Introduction to Data link layer- Error detection and correction: Introduction-Block Coding-Cyclic Codes-Checksum –Data Link Control: DLC Services- Framing - Flow and Error control - Connectionless and Connection Oriented-Data Link Layer Protocols: Simple Protocol-Stop and Wait Protocol-HDLC		9

UNIT – III	NETWORK LAYER	Hrs
Network layer services – Packet switching – Network layer performance - IPv4: Address space – Classful addressing – Classless addressing – Forwarding of IP packets – Network layer protocols: Internet Protocol – Unicast routing: Introduction - Routing algorithms – Unicast routing protocols - IPv6 addressing: Representation – Address space		9
UNIT – IV	TRANSPORT LAYER	Hrs
Introduction: Transport Layer Services – Transport layer protocols-Transmission control protocol- Stop and wait protocol – Go back N protocol – Selective repeat – Bidirectional protocols - Services and Ports Number - User datagram protocol: User datagram - UDP Services - UDP Applications - Transmission control protocol		9
UNIT – V	APPLICATION LAYER	Hrs
Introduction – Client server programming – Standard client server protocols – interactive programming in c- secure shell- Control connections – Data connections – Electronic mail: Architecture – Web based email – Telnet: Local Vs Remote Logging – Domain Name System: Name space – DNS in Internet – Resolution		9

Total: 45 Hours

Text book:

1. Behrouz A. Forouzan, “Data communication and networking”, Fifth Edition, McGraw- Hill Education (India) Pvt. Ltd. 2013

Reference Book(s)

1. William S.Stallings,”Data and Computer Communications”, Ninth Edition,Prentice-Hall,2011.
2. Tanenbaum and David Wetherall, “Computer Networks”, Fifth Edition, Prentice-Hall, 2011.
3. L.Peterson and B.Davie, “Computer Networks, A Systems Approach”, Fifth Edition, Morgan Kaufman,2012

503104	COMPUTER NETWORKS LAB	L	T	P	C
		0	0	3	2

Programme:	B.E - CSE	Sem:	4	Category:	CS
Prerequisite:	Should have some basic idea in Programming and Networking				
Aim:	To introduce the concepts, terminologies and technologies used in modern days' data communication and computer networking in a practical manner.				
Course Objectives:					
1	To understand the concepts of computer networks in a practical way.				
2	To make the students get familiarized with different protocols and routing algorithm in a practical way.				
3	Understand the concept of network simulator and its functions.				
Course Outcomes: The students will be able to					
CO1:	Understand the basic concepts of computer networks and its functions				
CO2:	Analyze the various methods on different protocols and different techniques on routing algorithms				
CO3:	Implement the network simulator with functionalities				

COURSE OUTCOMES VS PROGRAM OUTCOMES MAPPING:

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	2	1	1	2										2
CO 2	2	2	2	1								2	1	
CO 3	2		2	2	2							2		1

Enter correlation levels 1, 2 & 3 define as: 1-low, 2- medium, & 3-high

List of Experiments

1. Develop a Program to find the class of an Internet Address
2. Develop a Client Server application by using RMI
3. Implement a Chat application using TCP Sockets
4. Develop an application which illustrates DNS using UDP Sockets
5. Develop simulation program for Stop and Wait protocol
6. Implement a program which illustrate the working of ARP
7. Implement a program which illustrate the working of RARP
8. Implementation of Link state routing algorithm
9. Develop a program for Hamming code error detection and correction
10. Study of Network Simulator
11. Creation of a Mesh topology using Network Simulator 2
12. Creation of a Star topology using Network Simulator 2

Total: 45 Periods

Hardware / Software Required for a

Batch of 30 Students Hardware

- LAN System with 30 nodes (OR) Standalone PCs – 30 Nos.

Software Requirements:

- OS – Windows 2000 Professional/XP
- JAVA or C
- Network Simulator 2