Name of the Faculty: Ms. Jasleen Kaur
Discipline: Computer science & Engg.
Semester:5th
Subject: Computer Network (CSE 303N)
Work Load (Lecture/Practical) per week (in hours): Lectures- 3 Hours , Practicals- 3 Hours

	Theory		Practical	
Week	**Lecture day**	**Topic (including assignment/test)**	**Practical day**	**Topic**
1st	**1st**	**Introduction** to Computer Networks, Data Communication System and its components, Data Flow	**1st**	Create a socket for HTTP for web page upload and download.
	2nd	Computer network and its goals, **Types of computer networks:** LAN, MAN, WAN		
	3rd	Wireless and Wired networks, broadcast and point-to-point networks		
2nd	**4th**	Network topologies,protocols	**2nd**	Write a code simulating ARP /RARP protocols.
	5th	Interfaces and services, ISO-OSI reference model		
	6th	TCP/IP architecture		
3rd	**7th**	Physical Layer: Concept of Analog & Digital Signal, Bandwidth	**3rd**	Study of TCP/UDP performance.
	8th	**Transmission Impairments**: Attenuation, Distortion, Noise		
	9th	**Multiplexing :** Frequency Division, Time Division, Wavelength Division**,(Assignment-1)**		
4th	**10th**	**Introduction to Transmission Media** :Twisted pair, Coaxial cable, Fiber optics	**4th**	Performance comparison of MAC protocols
	11th	**Introduction to Transmission Media** :Wireless transmission (radio, microwave, infrared)		
	12th	**Introduction to Transmission Media** :Switching: Circuit Switching, Message Switching ,Packet Switching		
5th	**13th**	**Introduction to Transmission Media** :narrowband ISDN, broadband ISDN and ATM.	**5th**	Performance comparison of routing protocols.
	14th	**Unit Test - I**		
	15th	**Data link layer:** Error Control, Types of errors, framing(character and bit stuffing)		
6th	**16st**	error detection & correction methods; Flow control	**6th**	Write a program to implement echo server and client in java using TCP sockets.
	17nd	**Protocols:** Stop & wait ARQ, Go-Back- N ARQ**(Assignment-2)**		
	18rd	sliding window protocols, Selective repeat ARQ, **(Assignment-2)**		
7th	**19th**	HDLC,FDDI	**7th**	Write a program to implement date server and client in java using TCP sockets.
	20th	**Medium access sub layer**: Point to point protocol		
	21th	**Medium access sub layer:**token bus, token ring; Reservation, polling		
8th	**22th**	**Multiple access protocols:** Pure ALOHA	**8th**	Write a program to implement echo server and client in java using UDP sockets
	23th	**Multiple access protocols:** Slotted ALOHA, CSMA, CSMA/CD		
	24st	FDMA, TDMA, CDMA,		
9th	**25rd**	LLC, Traditional Ethernet, fast Ethernet,	**9th**	Write a program to implement a chat server and client in java using UDP sockets.
	26th	Network devices-repeaters,hubs,switches,Bridges,Router, Gateway		
	27th	**Unit Test -II**		
10th	**28th**	**Network layer:** Addressing : Internet address, subnetting	**10th**	To flood the server from a spoofed source address leading to a DoS attack.
	29th	**Routing techniques,** static vs. dynamic routing ,		
	30th	**Routing techniques:**routing table, DHCP		
11th	**31st**	**Routing techniques:**IEEE standards 802.x,**(Assignment-3)**	**11th**	To sniff and parse packets that pass through using raw sockets.
	32nd	**Routing algorithms:** shortest path algorithm, flooding, distance vector routing,		
	33rd	link state routing**; Protocols:** ARP, RARP, IP, ICMP		
12th	**34th**	**Protocols:**IGMP, IPV6; Unicast and multicast routing protocols.	**12th**	To implement simple calculator and invoke arithmetic operations from a remote client
	35th	**Unit Test - III**		
	36th	**Transport layer:** Process to process delivery; UDP		
13th	**37th**	**Transport layer**:TCP, RPC,	**13th**	To implement bubble sort and sort data using a remote client.
	38th	**Congestion control algorithm:**Leaky bucket algorithm		
	39st	**Congestion control algorithm**:Token bucket algorithm, choke packets		
	40rd	**Quality of service:** techniques to improve QoS.		To simulate a sliding window protocol that uses

14th	**41`th**	**Application layer:** DNS; SMTP	**14th**	Go Back N ARQ.
	42th	**Application layer:**SNMP, FTP, HTTP & WWW**(Assignment-4)**		
15th	**43th**	**Application layer:**Firewalls, Bluetooth, Email,S/MIME, IMAP**(Assignment-4)**	**15th**	
	44th	**Security:** Cryptography, user authentication, security protocols in internet, public key encryption algorithm		
	45th	**Security:**digital signatures		