Computer Networks(KCS- 603)	
Course Outcome (CO)	**Bloom's Knowledge Level (KL)**

	At the end of course , the student will be able to understand	
CO 1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission	K_1, K_2
CO 2	Apply channel allocation, framing, error and flow control techniques.	K_3
CO 3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.	K_2, K_3
CO 4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.	K_2, K_3
CO 5	Explain the functions offered by session and presentation layer and their Implementation.	K_2, K_3
CO 6	Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.	K_2

DETAILED SYLLABUS		3-0-0
Unit	**Topic**	**Proposed Lecture**
I	**Introductory Concepts**: Goals and applications of networks, Categories of networks, Organization of the Internet, ISP, Network structure and architecture (layering principles, services, protocols and standards), The OSI reference model, TCP/IP protocol suite, Network devices and components. **Physical Layer:** Network topology design, Types of connections, Transmission media, Signal transmission and encoding, Network performance and transmission impairments, Switching techniques and multiplexing.	**08**
II	**Link layer:** Framing, Error Detection and Correction, Flow control (Elementary Data Link Protocols, Sliding Window protocols). Medium Access Control and Local Area Networks: Channel allocation, Multiple access protocols, LAN standards, Link layer switches & bridges (learning bridge and spanning tree algorithms).	**08**
III	**Network Layer:** Point-to-point networks, Logical addressing, Basic internetworking (IP, CIDR, ARP, RARP, DHCP, ICMP), Routing, forwarding and delivery, Static and dynamic routing, Routing algorithms and protocols, Congestion control algorithms, IPv6.	**08**
IV	**Transport Layer:** Process-to-process delivery, Transport layer protocols (UDP and TCP), Multiplexing, Connection management, Flow control and retransmission, Window management, TCP Congestion control, Quality of service.	**08**
V	**Application Layer:** Domain Name System, World Wide Web and Hyper Text Transfer Protocol, Electronic mail, File Transfer Protocol, Remote login, Network management, Data compression, Cryptography – basic concepts.	**08**

Text books and References:

1. Behrouz Forouzan, "Data Communication and Networking", McGraw Hill

2. Andrew Tanenbaum "Computer Networks", Prentice Hall.

3. William Stallings, "Data and Computer Communication", Pearson.

4. Kurose and Ross, "Computer Networking- A Top-Down Approach", Pearson.

5. Peterson and Davie, "Computer Networks: A Systems Approach", Morgan Kaufmann

6. W. A. Shay, "Understanding Communications and Networks", Cengage Learning.

7. D. Comer, "Computer Networks and Internets", Pearson.

8. Behrouz Forouzan, "TCP/IP Protocol Suite", McGraw Hill.