

Course Code	Course Title				Core/Elective		
PC 505IT	COMPUTER NETWORKS				Core		
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	1	-	-	30	70	3
<p>Course Objectives:</p> <ul style="list-style-type: none"> ➤ To study the design issues in network layer and various routing algorithms ➤ To introduce internet routing architecture and protocols ➤ To learn the flow control and congestion control algorithms in Transport Layer ➤ To introduce the TCP/IP suite of protocols and the networked applications supported by it ➤ To learn basic and advanced socket system calls <p>Course Outcomes:</p> <p>Student will be able to</p> <ul style="list-style-type: none"> ➤ Explain the function of each layer of OSI and trace the flow of information from one node to another node in the network ➤ Understand the principles of IP addressing and internet routing ➤ Describe the working of various networked applications such as DNS, mail, file transfer and www ➤ Implement client-server socket-based networked applications 							

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software: Reference Models (ISO - OSI, TCP/IP). Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms

UNIT – II

Internetworking: Concatenated virtual circuits, Connectionless internetworking, Tunneling, Fragmentation. Network layer in the Internet: IP protocol, IP addresses, Internet control protocols, OSPF, BGP, Mobile IP, IPv6. The Internet Transport Protocols: UDP, Internet Transport Protocols: TCP.

UNIT – III

Network Programming: Socket Interface: Sockets, Socket Address, Elementary Sockets, Advanced Sockets, Socket Options, Remote Procedure Calls: Introduction, Transparency Issues and Sun RPC.

UNIT – IV

Application Layer: Domain Name System: DNS Name Space, Resource Records, Name Servers. Electronic Mail: Architecture and Services, User Agent, Message Formats, Message transfer and Final Delivery. World Wide Web: Architectural Overview, Static Web Documents, Dynamic Web Documents, HTTP, Wireless Web.

UNIT – V

Network Security: Cryptography, Symmetric Key Algorithms, Public Key Algorithms, Digital Signatures, Communication Security, Authentication Protocols, Email Security, Web Security.

Suggested Reading:

1. Andrew S. Tanenbaur, Computer Networks, Fourth Edition, Pearson Education.
2. W. Richard Stevens, Unix Network Programming” Prentice Hall/Pearson Education, 2009.
3. James F. Kurose, Keith W, Ross, Computer Networking, Atop-Down Approach Featuring the Internet, Third Edition, Pearson Education , 2005.
4. William Stallings, Computer Networking with Internet Protocols and Technology, Pearson Education, 2009