



Course Title : Computer Networks			
Course Code: P18CS53	Semester : 5	L:T:P - 4 : 4 : 0	Credits: 4
Contact Period : Lecture :52 Hr, Exam: 3Hr		Weightage :CIE:50% SEE:50%	

Course Content

Unit-1

Network Layer: Network-Layer Services, Packet Switching, Network-Layer Performance, IPv4 Addresses, Forwarding of IP Packets: Forwarding based on Destination Address, Forwarding Based on Label.

Network-Layer Protocols: Internet protocol (IP), ICMPv4, Mobile IP.

Self study component: Network Address Resolution (NAT), Routers as Packet Switches, Insufficiency in Mobile IP.

11 Hours

Unit-2

Unicast Routing: Introduction, Routing Algorithms, Unicast Routing Protocols: Internet Structure, RIP (Routing Information Protocol), Open Shortest Path First (OSPF),

Multicast Routing: Introduction, Multicasting Basics: Multicast Addresses, Delivery at Data Link Layer, Collecting Information about Groups, Multicast Forwarding, Intradomain Multicast Protocols: DVMRP (Distance Vector Multicast Routing Protocol), Multicast Link State (MOSPF), Protocol Independent Multicast (PIM), Internet Group Management Protocol (IGMP).

Self study component: Border Gateway Protocol Version 4 (BGP4), Two approaches to Multicasting, Interdomain Multicast Protocols.

10 Hours

Unit-3

Next Generation IP: IPv6 Addressing, The IPv6 Protocol, The ICMPv6 Protocol, Transition from IPV4 to IPV6.

Introduction to Transport Layer: Introduction, Transport Layer Protocols: Simple Protocol, Stop and Wait Protocol, Go-Back-N Protocol (GBN), Selective Repeat Protocol, Bidirectional Protocols: Piggybacking.

Self study component: Group Membership Messages, Write a program to simulate the distance vector algorithm, link-state algorithm and path vector algorithm.

10 Hours

Unit-4

Transport Layer Protocols: Introduction, UDP (User Datagram Protocol), Transmission Control Protocol (TCP): TCP Services, TCP Features, Segment, A TCP Connection, State Transition Diagram, Windows in TCP, Flow Control, Error Control, TCP Congestion Control, SCTP (Stream Control Transmission Protocol) : SCTP Services, SCTP features, Packet format, An SCTP Association, Error Control in SCTP.

Introduction to Application Layer: Introduction: Providing Services, Application layer Paradigms, Client - Server Programming: Application Programming Interface (API), Using Services of the Transport Layer, Iterative Communication using UDP, Iterative communication using TCP, Concurrent Communication.

Self study component: TCP Timers, Iterative Programming in C: General Issues, Iterative programming using UDP, Iterative programming using TCP.

10 Hours

Unit-5



Standard Client- Server Protocols: WWW(World Wide Web), HTTP(Hyper Text Transfer Protocol), FTP(File Transfer Protocol),Electronic Mail(e-mail), TELNET, SecureShell(SSH), DNS(Domain Name System):Name Space, DNS in the Internet, Resolution, Catching, Resource Records, DNS messages, Registrars.

Network Management: Introduction, SNMP, ASN.1

Self study component: Security for FTP, E-Mail Security, Security of DNS, Dynamic Domain Name System (DDNS).

11 Hours

Text Book:

1. Behrouz A. Forouzan: Data communication and Networking, 5th ed., Tata McGraw Hill, 2012.

Reference Books:

1. Larry L. Peterson and Bruce S Davie: Computer Networks: A Systems Approach, Fifth Edition, Elsevier, 2011.
2. William Stallings: Data and Computer Communications, 8th Edition, Pearson Education, 2012.
3. James F. Kurose and Keith W. Ross: Computer Networking: A Top-Down Approach, 6th edition, Addison-Wesley, 2009.
4. Tanenbaum : Computer Networks, 5th Edition, Pearson Education/PHI, 2011.

Course Outcomes

1. **Discuss** the services provided by network layer such as Packetizing, Forwarding and Routing, IPV4 addressing for host-to-host communication.
2. **Analyse** and **apply** the routing algorithms such as distance vector, link state, hierarchical & multicast routing for transmitting reliable data through wired/wireless media.
3. **Design** and **Construct** a Network and its Performance can be measured based on various factors such as delay, throughput, and packet loss.
4. **Discuss** the service provided by transport layer such as process to process communication, addressing, multiplexing, de-multiplexing, error control, flow control and congestion control.
5. **Design** and **Implement** client - server paradigm or peer-to-peer paradigm using HTTP, DNS, TELNET, FTP protocols by knowing the importance of application layer in internet.

CO-PO Mapping

Semester: 5 th		Course Code: P18CS53						Title: Computer Networks							
CO	Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS 01	PS 02
CO1	Discuss the services provided by network layer such as Packetizing, Forwarding and Routing, IPV4 addressing for host-to-host communication.	1	1											1	
CO2	Analyze and Apply the routing algorithms such as distance vector, link state, hierarchical & multicast routing for transmitting reliable data through wired/wireless media.	2	1	1										1	



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C03	Design and Construct a Network and its Performance can be measured based on various factors such as delay, throughput and packet loss.	-	1	1		2								1	
C04	Discuss the service provided by transport layer such as process to process communication, addressing, multiplexing, de-multiplexing, error control, flow control and congestion control.	1	2											1	
C05	Design and Implement client - server paradigm or peer-to-peer paradigm using HTTP, DNS, TELNET, FTP protocols by knowing the importance of application layer in internet.	1	2	1		2								1	
		1.2 5	1.4	1		2								1	