COURSE TITLE : COMPUTER NETWORKS
COURSE CODE : 6131
COURSE CATEGORY : A
PERIODS/WEEK : 4
PERIODS/SEMESTER : 60
CREDITS : 5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Review of Network Models	**15**
2	Network Layer	**15**
3	Transport Layer	**15**
4	Application Layer	**15**

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	**1**	To Understand the concept of TCP/IP Protocol
2	**1**	To Understand the concept of Network Layer
3	**1**	To Understand the concept of Transport Layer
4	1	To Understand the concept of Application Layer

Specific Outcomes:

MODULE I. REVIEW OF NETWORK MODELS

1.1 Understand TCP/IP Protocol

- 1.1.1 Illustrate computer networks
- 1.1.2 Identify TCP/IP Protocol suite.
- 1.1.3 Explain the functionalities of layers in TCP/IP
- 1.1.4 Define Addressing of TCP/IP.
- 1.1.5 Describe about Wired LAN – Ethernet
- 1.1.6 State IEEE 802 project
- 1.1.7 Illustrate standard Ethernet
- 1.1.8 Describe about Wireless LAN.
- 1.1.9 State IEEE 802.11
- 1.1.10 Explain LAN connecting devices.
- 1.1.11 Explain the architecture of Virtual LANs.

MODULE II NETWORK LAYER

2.1 Understand Network Layer

- 2.1.1 Explain Network layer services
- 2.1.2 Illustrate network layer performance
- 2.1.3 Describe IPV4 addresses

2.1.4 Define DHCP
2.1.5 Explain Internet Protocol
2.1.6 State security of IPV4 datagram
2.1.7 Describe routing algorithms
2.1.8 Differentiate between unicasting, multicasting, and broadcasting

MODULE III TRANSPORT LAYER

3.1 Understand Transport Layer
3.1.1 Explain Transport layer services
3.1.2 Explain Transport layer protocols
3.1.3 Explain User Datagram Protocol (UDP).
3.1.4 Explain Transmission Control Protocol (TCP).
3.1.5 Describe Stream Control Transmission Protocol (SCTP).

MODULE IV APPLICATION LAYER

4.1 Understand Application Layer
4.1.1 Explain various services of application layer
4.1.2 Illustrate World Wide Web
4.1.3 Describe HTTP
4.1.4 Explain File Transfer Protocol.
4.1.5 Explain Electronic Mail
4.1.6 Explain TELNET.
4.1.7 Describe Domain Name System.
4.1.8 Define Dynamic DNS

CONTENT DETAILS

MODULE I – TCP/IP PROTOCOL

Introduction to computer networks – physical structure, topology, types - TCP/IP – architecture, Description of layers, addressing – wired LAN – Ethernet protocol – IEEE project 802 – Standard Ethernet – characteristics, addressing, implementation – wireless LAN – architectural comparison, characteristics, access control – IEEE 802.11 – architecture – LAN connecting devices – hub, switch, router – virtual LAN – architecture, membership, configuration

MODULE II – NETWORK LAYER

Network layer services – Packetizing, routing and forwarding, other services – Performance – delay, throughput, packet loss, congestion control – IPV4 address – address space, classful addressing, classless addressing, subneting – DHCP – Internet protocol (IP) – datagram format, fragmentation – IPV4 datagram security – Routing algorithms – Distance-vector, Link-state, path vector – unicasting, multicasting, broadcasting

MODULE III – TRANSPORT LAYER

Transport layer services - process-to-process communication, encapsulation and decapsulation, pushing, flow control, error control, congestion control, connectionless and connection oriented protocols – Transport layer protocols – simple, stop and wait, go back-N, Selective repeat, piggy backing - UDP – user datagram, services, applications – TCP – services, features, segment, connection – SCTP – services, features

MODULE IV – APPLICATION LAYER

Application layer services - WWW – architecture, URL – HTTP – connections, message formats - FTP – control connections, data connections - Electronic mail – architecture, sending, receiving mails, SMTP, transfer phases, POP and IMAP - TELNET – DNS – name space, DNS in internet, resolution, resource records, DNS messages – Dynamic DNS

TEXT BOOK(S):

1. Data Communications and Networking – Behrouz A. Forouzan – McGraw Hill Edn.-Fourth Edition/Fifth Edition

REFERENCES:

1. Computer Networks – Andrew S. Tanenbaum – Prentice Hall-Fifth Edition
2. Data Communication & Networks - William Stalling- Prentice Hall-Tenth Edition
3. Data Communications, Computer Networks and Open Systems –Fred Halsall , Addison-Wesley, 1996