

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, subnetting – 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