MCA109: Advanced Computer Networks

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week	Class Test -12Marks
Tutorials: 1 hr/Week	Teachers Assessment - 6Marks
	Attendance – 12 Marks
Credits: 4	End Semester Exam – 70 marks

Pre-requisites: Data Communication and Computer Network, INTERNET, Router

Course Objectives:

1. To discuss and explain about basics of data communication and networking concepts .Explain how the data link layer prepares data for transmission les and list the component parts of a Layer
2. To discussed the medium access control and to create a logical design and physical design of a simple Ethernet LAN
3. Describe how routers use next-hop addresses to determine the path that packets need to take to reach their destinations and their describe the IP addressing structure
4. Explain the difference between TCP and UDP and describe how TCP and UDP function are worked Describe and application layer for using end user application such as DNS, SMTP and Telnet etc

---

UNIT 1

Introduction – Data Communication, Data encoding and Modulation, Broadband and Baseband transmission, The Internet Today, Protocols and Standards, Internet Standards Network topologies design ,Connecting Devices, Network Types, OSI Reference Model, TCP/IP Protocol Suite

---

UNIT 2

Data Link Layer: Error Detection and Correction, Techniques, CRC and Hamming Code. Flow Control and Error Control Techniques: Stop and Wait, Sliding Window, Go-Back-N, Selective Repeat Protocol. Ethernet, Ethernet frame, Addressing.

UNIT 3

Media Access Sub layer-Media Access Sub layer, ALOHA Protocol, Overview of protocol, Channel allocation, WLAN protocol, CSMA, CSMA/CD, CSMA/CA and CDMA Protocol, Wireless LAN
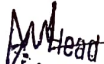

UNIT 4

Network Layer: Network Layer - Point - to Pont Networks, Routing Protocols, TCP / IP, IP packet, IP address, IPv4 &IPv6. Bluetooth, Cellular telephony, IP Addresses: Class Addressing,

---

UNIT 5

Transport Layer: TCP, & UDP protocol, Routing Protocols, Static & Dynamic Routing, Routing Table and Routing Module, Socket Interface: Definitions, Byte Ordering, Address Transformation, Byte Manipulation Function, Information about Remote Host, Socket System Calls, Connectionless Iterative Server,

---

UNIT-6

Application Layer: Network Management and SNMP Multimedia and Data Compression, Electronic Mail: SMTP and MIME, DNS, TELNET & Rlogin, FTP, TFTP, SMTP, HTTP, WWW, RTP, BOOTP & DHCP, DNS, TELNET & Rlogin.

Text and Reference Books

1. Behrouz A Forouzan: TCP/IP Protocol Suite, 4th Edition,2010, TMH
2. Douglas E Comar: TCP/IP Protocol, 6th Edition,2008, Pearson Education
3. Behrouz A Forouzan: Data Communication and Networking, 4th Edition,2006, TMH
4. Richard Stevens: TCP/IP Illustrated Vol 1: The Protocols, 1st Edition,2006, Pearson Education, India.

Course Outcomes:

After completing the course, students will be able to:

1. Recognize and Describe about the working of Computer Networks and Illustrate reference models with layers, protocols and interfaces.
2. Illustrate data link layer for using different error Control techniques
3. Examine problems of a computer networks related techniques for CSMA/CD, Aloha, Ethernet and WLAN
4. Students will understand for network layer internetworking technologies, Routing, IP Addressing and routing protocol for using shortest path for destination
5. Students will understand TCP/IP implementation
6. Students will understand the end user application for such domain name system , HTTP, UDP Telnet and SMTP etc

Head
Department of Computer Applications
Faculty of Computer Applications
Invertis University, Bareilly (UP)