



**BONAM VENKATA CHALAMAYYA INSTITUTE OF
TECHNOLOGY AND SCIENCE (A) :: BATLAPALEM, Andhra
Pradesh, India**

**MCA Course Structure & Syllabus
(Applicable for batches admitted from 2025-2026)**

**MCA II Semester
Course code : 25MC2T06**

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COMPUTER NETWORKS

Course Objectives:

At the end of the course, the students will be able to:

- To Understand the fundamental concepts of computer networking and OSI Reference model.
- To Familiarize the student with the basic taxonomy and terminology of the computer networking area
- To learn and understand the advanced networking concepts, preparing the student for entry advanced courses in computer networking.
- To develop and gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

UNIT-I

Introduction: Network Topologies WAN, LAN, MAN. Reference models, The OSI Reference Model, the TCP/IP Reference Model, A Comparison of the OSI and TCP/IP Reference Models. Physical Layer: Introduction to physical layer, Data and Signals, Periodic analog signals, digital signals, transmission impairment, Data rate limits, performance, Introduction to Guided Media, Twisted-pair cable, Coaxial cable and Fiber optic cable and Unguided media: Wireless-Radiowaves, microwaves, infrared

Unit-II

The Data Link Layer: Services Provided to the Network Layer, Framing, Error Control, Flow Control, Error Detection and Correction, Error-Correcting Codes, Error Detecting Codes. Elementary Data Link Protocols: Simplex Protocol, A Simplex Stop and Wait Protocol for an Error free channel, A Simplex Stop and Wait Protocol for a Noisy Channel, Sliding Window Protocols, A One Bit Sliding Window Protocol, Go-Back-N, Selective Repeat.

UNIT-III

The Medium Access Control Sublayer-The Channel Allocation Problem, Static Channel Allocation, Assumptions for Dynamic Channel Allocation, Multiple Access Protocols, Aloha, Pure aloha, slotted aloha, Carrier Sense Multiple Access Protocols, Collision-Free Protocols, Limited Contention Protocols. Wireless LAN Protocols Ethernet, Classic Ethernet Physical Layer, Classic Ethernet MAC Sublayer Protocol, Ethernet Performance, Fast Ethernet, Wireless LANs, The 802.11 Architecture and Protocol Stack, 802.11 Physical Layer, 802.11 MAC Sublayer Protocol, 802.11 Frame Structure, Services.

University Nominee Dr. Suneetha Eluri		Alumni Member Mr. Hari Suresh Polisetti	
Subject Expert:1 Dr. B Kezia Rani		Chairman Mr. AVS M Ganesh	
Subject Expert:2 Dr. Suneel Kumar Duvvuri		Member Mr. G L N V S Kumar	
Representative From Industry Mr. Sai Krishna Narima		Member	



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Unit-IV

The Network Layer Design Issues: Store and Forward Packet Switching, Services Provided to Transport layer, Implementation of Connection less Service, Implementation of Connection Oriented Service, Comparison of Virtual Circuit and Datagram Networks, Routing Algorithms, Optimality principle, Shortest path, Flooding, Distance vector, Link state, Hierarchical. Congestion Control algorithms: General principles of congestion control, Congestion prevention policies, Approaches to Congestion Control, Traffic Aware Routing, Admission Control, Traffic Throttling, Load Shedding. Internet Working: How networks differ, How networks can be connected, Tunneling, internetwork routing, Fragmentation, network layer in the internet, IP protocols, IPv4 protocol, IP addresses, Subnets, IP Version6- The main IPV6 header, Internet control protocols- ICMP, ARP, DHCP.

UNIT-V: The Transport Layer: Transport layer protocols: Introduction, services, port number, User datagram protocol, User datagram, UDP services, UDP applications, Transmission control protocol: TCP services- TCP features- Segment- A TCP connection, windows in TCP, flow control, Error control. Application Layer: World Wide Web: HTTP, FTP, Two connections, control connection, Data connection, security of FTP, Electronic mail, Architecture, web based mail, email security, TELENET, local versus remote Logging. Domain Name System: Name Space, DNS in Internet, Resolution, Caching, Resource Records, DNS messages, Registrars, security of DNS Name Servers.

Text Books:

1. Computer Networks: Andrew S Tanenbaum David J. Wetherill, 5/e, Pearson
2. Data communications and networking: BehrouzForouzan, 5/e, McGraw Hill

Reference Books

1. Computer Networks – A System Approach, Peterson, Bruce Davie, 2/e, Harcourt Asia
2. Compute communications and networking technologies, Gallo, Hancock, Cengage
3. An Engineering approach to computenetworking, Kesha, Pearson

WebResources1

1. https://onlinecourses.swayam2.ac.in/cec23_cs07/preview
2. https://onlinecourses.nptel.ac.in/noc21_cs18/preview
3. <https://ocw.mit.edu/courses/6-829-computer-networks-fall2002/pages/lecture-notes/>
4. <https://www.sanfoundry.com/computer-network-basics/>
5. https://www.cisco.com/c/en_in/solutions/enterprise-networks/what-iscomputer-networking.html
6. <https://www.cs.vu.nl/~ast/CN5/>

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