



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA

KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF INFORMATION TECHNOLOGY

IV Year – I Semester		L	T	P	C
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ADVANCED COMPUTER NETWORKS					

Course Objectives:

This course is aimed at enabling the students to

- Gain core knowledge of Network layer routing protocols and IP addressing.
- Study Session layer design issues, Transport layer services, and protocols.
- Acquire knowledge of Application layer and Presentation layer paradigms and protocols.
- Provide the mathematical background of routing protocols.
- To develop some familiarity with current research problems and research methods in advance computer networks.

Course Outcomes:

After the completion of the course, student will be able to

- Illustrate reference models with layers, protocols and interfaces
- Describe the routing algorithms, Sub netting and Addressing of IP V4 and IPV6
- Describe and Analysis of basic protocols of computer networks, and how they can be used to assist in network design and implementation
- Describe the concepts Wireless LANS, WIMAX, IEEE 802.11, Cellular telephony and Satellite networks

UNIT I

Network layer: Network Layer Services, Packet Switching, Performance, provided transport layers, implementation connectionless services, implementation connection oriented services, comparison of virtual –circuit and datagram subnets. IPV4 Address, Forwarding of IP Packets, Internet Protocol, ICMP v4, Mobile IP

UNIT II

Routing Algorithms–Distance Vector routing, Link State Routing, Path Vector Routing, Unicast Routing Protocol- Internet Structure, Routing Information Protocol, Open Source Path First, Border Gateway Protocol V4, Broadcast routing, Multicasting routing, Multicasting Basics, Intradomain Muticast Protocols, IGMP.

UNIT III

IPv6 Addressing, IPv6 Protocol, Transition from IPv4 to IPv6.

Transport Layer Services, connectionless versus connection oriented protocols. Transport Layer Protocols: Simple Protocol, Stop and Wait, Go-Back-N, Selective repeat, Piggy Backing.

UDP: User datagram, Services, Applications.

TCP: TCP services, TCP features, segment, A TCP connection, Flow control, error control, congestion control.



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UNIT IV

SCTP: SCTP services SCTP features, packet format, An SCTP association, flow control, error control.
QUALITY OF SERVICE: flow characteristics, flow control to improve QOS: scheduling, traffic shaping, resource reservation, admission control.

UNIT V

WWW and HTTP, FTP, Telnet, Domain name system, SNMP, Multimedia data, Multimedia in the Internet.

Text Books:

- 1) Data Communication and Networking , Behrouz A. Forouzan, McGraw Hill, 5th Edition, 2012
- 2) Computer Networks , Andrew S. Tanenbaum, David J. Wetherall, Pearson Education India; 5 edition, 2013.

Reference Books:

- 1) Computer networks, Mayank Dave, CENGAGE.
- 2) Computer Networks: A Systems Approach , LL Peterson, BS Davie, Morgan-Kauffman , 5th Edition, 2011.
- 3) Computer Networking: A Top-Down Approach JF Kurose, KW Ross, Addison-Wesley , 5th Edition, 2009.

e-Resources:

- 1) <https://nptel.ac.in/courses/106/105/106105183/>