

**PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY**

(Autonomous)

Kanuru, Vijayawada-520007

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI & ML)**

**III B. Tech – I Semester CSE (AI&ML)**

**Computer Networks**

<b>Course Code</b>	20AM3503	<b>Year</b>	III	<b>Semester</b>	I
<b>Course Category</b>	PCC	<b>Branch</b>	CSE (AI&ML)	<b>Course Type</b>	Theory
<b>Credits</b>	3	<b>L-T-P</b>	3-0-0	<b>Prerequisites</b>	Operating Systems
<b>Continuous Internal Evaluation</b>	30	<b>Semester End Examination</b>	70	<b>Total Marks</b>	100

<b>Course Outcomes</b>		
<b>Upon Successful completion of course, the student will be able to</b>		
<b>CO1</b>	Describe the basic concepts and protocols of different layers in Computer Networks.	<b>L2</b>
<b>CO2</b>	Apply error detection and correction techniques and Design IPv4 and IPv6 addressing schemes.	<b>L3</b>
<b>CO3</b>	Apply various Addressing mechanisms and implement the various Routing protocols for a given network.	<b>L3</b>
<b>CO4</b>	Analyze the services provided by Transport and Application Layers.	<b>L4</b>

<b>Contribution of Course Outcomes towards achievement of Program Outcomes &amp; Strength of correlations</b>														
<b>(3:High, 2: Moderate, 1:Low)</b>														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>CO1</b>	2													
<b>CO2</b>	3											1		
<b>CO3</b>	3											1		
<b>CO4</b>		3										1		

Syllabus		
Unit No.	Contents	Mapped CO
I	<b>Introduction:</b> Networks, Network Types, Network Topology, Network Models -The Protocol Layering, The OSI Model, TCP/IP Protocol Suite, OSI vs TCP. <b>Physical Layer: Transmission Media</b> - Guided Media, Un-Guided Media.	CO1
II	<b>Data-Link Layer:</b> Introduction, Link-Layer Addressing, Error Detection and Correction - Introduction, Cyclic Redundancy Check, Check sum. Data Link Control (DLC) - DLC Services, Media Access Control (MAC) - Random Access, Controlled Access.	CO1, CO2
III	<b>Network Layer:</b> Introduction to Network Layer, Network-Layer Services, Packet Switching, Network-Layer Performance, IPv4 Addresses, IPv6 Addressing. <b>Routing Algorithms:</b> Distance-vector Routing, Link-State Routing, Path-Vector Routing.	CO1, CO3
IV	<b>Transport Layer:</b> Introduction, Transport-Layer Protocols-Simple Protocol, Stop-and-wait Protocol, Go-Back-N protocol (GBN), Selective-Repeat Protocol, Bidirectional Protocols (Piggybacking), User Datagram Protocol (UDP)-User Datagram, UDP Services, UDP Applications, Transmission Control Protocol (TCP)- TCP Services, TCP Features, Segment, A TCP Connection, State Transition Diagram, Windows in TCP, Flow Control, Error Control, TCP Congestion Control, TCP Timers.	CO1, CO3, CO4
V	<b>Application Layer:</b> Standard Client-Server Protocols-World Wide Web and HTTP, FTP, Electronic Mail, Telnet, Secure Shell (SSH), Domain Name System (DNS).	CO1, CO4

Learning Resources
<b>Text Books</b>
1. Data Communications and Networking, Behrouz A. Forouzan, Fifth Edition, 2017, McGraw-Hill.
<b>References</b>
1. Computer Networking A Top-Down Approach, James F. Kurose, Keith W. Ross, Sixth Edition, 2017, Pearson Education.
2. Computer Network, Tanenbaum A. S, Sixth Edition, 2002, Pearson Education.
3. Computer Networks - A Systems Approach, Larry L. Peterson, Bruce S. Davie, Fifth Edition, 2018, Morgan Kaufmann.
<b>e-Resources &amp; other digital material</b>
1. <a href="https://nptel.ac.in/courses/106/105/106105183/">https://nptel.ac.in/courses/106/105/106105183/</a>
2. <a href="https://nptel.ac.in/courses/106/105/106105081/">https://nptel.ac.in/courses/106/105/106105081/</a>
3. <a href="https://www.youtube.com/playlist?list=PLEAYkSg4uSQ2NMzNNsEK5RVbhxqx0BZF">https://www.youtube.com/playlist?list=PLEAYkSg4uSQ2NMzNNsEK5RVbhxqx0BZF</a>
4. <a href="https://www.scalar.com/topics/course/free-computer-networks-course">https://www.scalar.com/topics/course/free-computer-networks-course</a>
5. <a href="https://www.udemy.com/topic/cisco-ccna/">https://www.udemy.com/topic/cisco-ccna/</a>