PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Data Science)

III B. Tech – I Semester CSE (Data Science))

Computer Networks

Course Code	20DS3503	Year	III	Semester	I
Course Category	PCC	Branch	CSE(DataScience)	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Operating Systems
Continuous Internal Evaluation	30	Semester End Examination	70	Total Marks	100

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

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations

(3:High, 2: Moderate, 1:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	3											1		
CO3	3											1		
CO4		3										1		

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Introduction:** Networks, Network Types, Network Topology, Network Models -The Protocol Layering, The OSI Model, TCP/IP Protocol Suite, OSI vs TCP. **Physical Layer: Transmission** Media - Guided Media, Un-Guided Media.	CO1
II	**Data-Link Layer:** 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	**Network Layer:** Introduction to Network Layer, Network-Layer Services, Packet Switching, Network-Layer Performance, IPv4 Addresses, IPv6 Addressing. **Routing Algorithms**: Distance-vector Routing, Link-State Routing, Path-Vector Routing.	CO1, CO3
IV	**Transport Layer:** 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	**Application Layer:** Standard Client-Server Protocols-World Wide Web and HTTP, FTP, Electronic Mail, Telnet, Secure Shell (SSH), Domain Name System (DNS).	CO1, CO4

Learning Resources
Text Books
1. Data Communications and Networking, Behrouz A. Forouzan, Fifth Edition, 2017, McGraw-Hill.
References
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.
e-Resources & other digital material
1. https://nptel.ac.in/courses/106/105/106105183/   2. https://nptel.ac.in/courses/106/105/106105081/   3. https://www.youtube.com/playlist?list=PLEAYkSg4uSQ2NMmzNNsEK5RVbhxqx0BZF   4. https://www.scalar.com/topics/course/free-computer-networks-course   5. https://www.udemy.com/topic/cisco-ccna/