MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act,1956

COURSE CONTENT

COMPUTER NETWORKS LAB

Semester: CSD/CSE/CSM

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
2540583	Core	0	0	2	1	40	60	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 30				Total Classes: Nil		

Prerequisites: There are no prerequisites to take this course.

Course Objectives:

- To understand the working principle of various communication protocols.
- To understand the network simulator environment and visualize a network topology and observe its performance
- To analyze the traffic flow and the contents of protocol frames

Course Outcomes: After Completion of the Course, Students should be able to:

- Implement and analyze data link layer techniques including framing, error detection using CRC, and flow control with sliding window protocols.
- Apply routing algorithms to compute efficient network paths and routing tables.
- Develop programs for network performance optimization including congestion control, buffer management, and data encryption/decryption.
- Analyze network traffic using tools like Wire shark and N map to understand packet behavior and network security.
- Simulate network scenarios in NS2 to evaluate packet transmission, throughput, congestion, and overall network performance.

List of Experiments

1. Implement the data link layer framing methods such as character, character-stuffing and bit stuffing.
2. Write a program to compute CRC code for the polynomials CRC-12, CRC-16 and CRCCCIP
3. Develop a simple data link layer that performs the flow control using the sliding window protocol, and loss recovery using the Go-Back-N mechanism.
4. Implement Dijsktra's algorithm to compute the shortest path through a network
5. Take an example subnet of hosts and obtain a broadcast tree for the subnet.
6. Implement distance vector routing algorithm for obtaining routing tables at each node.
7. Implement data encryption and data decryption
8. Write a program for congestion control using Leaky bucket algorithm.
9. Write a program for frame sorting techniques used in buffers.
10. **Wire shark**
    i. Packet Capture Using Wire shark
    ii. Starting Wire shark
    iii. Viewing Captured Traffic
    iv. Analysis and Statistics & Filters.
11. How to run N map scan

12. Operating System Detection using N map
13. Do the following using NS2 Simulator
    i. NS2Simulator-Introduction
    ii. Simulate to Find the Number of Packets Dropped
    iii. Simulate to Find the Number of Packets Dropped by TCP/UDP
    iv. Simulate to Find the Number of Packets Dropped due to Congestion
    v. Simulate to Compare Data Rate & Throughput.
    vi. Simulate to Plot Congestion for Different Source/Destination
    vii. Simulate to Determine the Performance with respect to Transmission of Packets

TEXTBOOK:

1. Computer Networks, Andrew S Tanenbaum, David.j.Wetherall, 5th Edition Pearson Education/PHI

REFERENCES:

1. An Engineering Approach to Computer Networks, S.Keshav, 2nd Edition, Pearson Education
2. Data Communications and Networking–Behrouz A. Forouzan.3rdEdition, TMH.

ELECTRONIC RESOURCES:

1. **https://www.scribd.com**
2. **http://www.geeksforgeeks.org**

MATERIALS ONLINE:

1. Lab Manual
2. Open-ended experiments