Course Code	Course name	L	T	P	C
CSEG2165	Data communication and Networks Lab	0	0	2	1
Total Units to be Covered: 12		Total Contact Hours: 30			
Prerequisite(s):		Syllabus version: 1.0			

Course Objectives

The objectives of this course are as follows:

1. Understand the basic components and functions of computer networks, including network topologies, protocols, and networking devices.
2. Gain an understanding of error and flow control techniques on communication channels.
3. Explore IP addressing, subnetting, routing algorithms and their application.
4. Get a brief idea about network analysis tools (Wireshark, NMAP).

Course Outcomes

The outcomes of this course are as follows:

CO1: Evaluate network devices functionality and network command significance.

CO2: Implement error control algorithm.

CO3: Analyze and implement routing algorithms.

CO4: Implement and evaluate various network topologies.

CO5: Familiarize with network simulator and network traffic analysis tools.

CO-PO Mapping

Program Outcomes / Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 2	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 3	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 4	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 5	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
Average	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-

1 – Weakly Mapped (Low) **2 – Moderately Mapped (Medium)**

3 – Strongly Mapped (High) **"_" means there is no correlation**

List of Experiments

Experiment 1: Familiarization with networking devices. **(CO1)**

Experiment 2: Write a program for bit stuffing and de-stuffing in a bit stream. **(CO2)**

Experiment 3: Write a program for CRC and Hamming Code. **(CO2)**

Experiment 4: Familiarization with Network IP, subnetting and supernetting. **(CO3)**

Experiment 5: Familiarization of basic network command and network configuration commands. **(CO1, CO5)**

Experiment 6: Set up a network topology in Cisco Packet Tracer (Ring, Bus, Star, Mesh etc.) **(CO4, CO5)**

Experiment 7: Set up network topology in two and more than two routers. **(CO4, CO5)**

Experiment 8: Distance vector routing protocol **(CO3)**

Experiment 9: Link-state vector routing protocol **(CO3)**

Experiment 10: Familiarization with network monitoring tools (NMAP and Wireshark) **(CO5)**

Experiment 11: Capture network traffic using Wireshark. **(CO5)**

Experiment 12: Analyzing network traffic using Wireshark. **(CO5)**

Total Lab hours 30

Textbooks

1. James F. Kurose, and Keith W.Ross, "Computer Networking : A Top-Down Approach", 8th Edition, Pearson, 2022.

2. Andrew S. Tanenbaum, "Computer Networks", 5th Edition, Pearson Education, 2023.

Reference Books

1. W. Tomasi, "Introduction to data communications and networking", 5th edition, Prentice-Hall, Inc., 2008.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme: Continuous Assessment

Components	Quiz & Viva	Performance & Lab Report
Weightage (%)	50	50