DEPARTMENT OF SOFTWARE ENGINEERING

BACHELORS IN SOFTWARE ENGINEERING

Course Code: CS-351

Course Title: Computer Communication Networks

Complex Engineering Problem (CEP)

TE Batch 2022, Spring Semester 2025

Course Learning Outcome

CLO 1: Discuss basic computer network topologies and reference models. (C2 – PLO 1)
CLO 2: Explore the operation and design issues of OSI Layers. (C3 - PLO 2)

Complex problem-solving attributes (CPA) covered (as per PEC - OBA manual – 2019)

- **CPA-1 Depth of analysis required:** These problems do not have readily apparent solutions and demand abstract thinking and innovative analysis to develop appropriate models.

- **CPA-2 Level of interaction:** Necessitate the resolution of substantial challenges resulting from the interplay of diverse or conflicting technical, engineering, or other factors.

Problem Statement

Students are required to create a network using open-source tools. It is required to perform alterations in the network in such a way that the network become either performance/security/energy efficient. The assigned task uses in-depth knowledge of TCP/IP Layers. Students must first properly install and configure the tool. Once the configuration is completed then implement the given scenario.

Minimum Required Features:

1. Implementation: Create a network using any chosen tool and modify it as per the said objective.

2. Documentation: Create detailed documentation with the following sections

- Abstract
- Introduction
- Literature Review
- Methodology
- Comparative Analysis
- Conclusion

Instructions and Guidelines:

1. Implementation: Tools that can be used for implementation include SDN based tools (ONOS, Ryu Faucet, Faucet, OpenDaylight), NFV tools (OpenNF), CloudSim, Kubernetes, Docker, IBN etc.

2. Documentation: The document must be prepared through the available templates of IEEE, Elsevier, MDPI or Wiley.

Deliverables:

The students have to submit a written report in a prescribed format. The report must be plagiarism free i.e., plagiarism must be within 15%. The report must not be AI generated.

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Grading Rubric

Group Members:

Student No.	Name	Roll No.
S1		
S2		
S3		
S4		

CRITERIA AND SCALES			Marks Obtained			
			S1	S2	S3	S4
Criterion 1: To what extent the student installed and configured the tool? (CPA-1, CPA-2)						
1	**2**	**3**				
The student installed the tool but not configured it properly.	The student installed and configured the tool partially.	The student installed and configured the tool satisfactorily.				
Criterion 2: To what extent the student implemented the assigned scenario in a configured tool? (CPA-1, CPA-2)						
1	**2**	**3**				
The student implemented the scenario in a configured tool unsatisfactorily.	The student implemented the scenario in a configured tool partially.	The student implemented the scenario in a configured tool satisfactorily.				
Criterion 3: To what extent the student has given the demonstration of the implemented work?						
1	**2**	**3**				
The student demonstrated the implemented work unsatisfactorily.	The student demonstrated the implemented work partially.	The student demonstrated the implemented work satisfactorily.				
Criterion 4: To what extent the student has given answers to the questions?						
1	**2**	**3**				
The student answered to the questions unsatisfactorily.	The student answered to the questions partially.	The student answered to the questions satisfactorily.				
Criterion 5: Does the report adhere to the given format and requirements?						
1	**2**	**3**				
The report does not contain the required information and is formatted poorly.	The report contains the required information partially and is also formatted partially.	The report contains all the required information and completely adheres to the given format.				
		Total Marks:				

Teacher's Signature