Department of Computer Science

College of Science

University of Cihan- Sulaimanyia Campus

Subject: Computer Networks

Course Book – Year 2nd.

Lecturer's name Dr.Lway Faisal (BSc, MSc, PhD)

Academic Year: 2023/2024

1. Information on the Programme

1.1. Higher Education Institution	*Cihan University Sulaimaniya*
1.2. College	*Science*
1.3. Department	*Computer Science*
1.4. Field of Study	*Computer Networks*
1.5. Cycle of Study[1]	*1*
1.6. Specialization/ Study Programme	*Computer Science*
1.7. Form of Education	*Full Time*

2. Information on the Discipline

2.1. Discipline Name	*Computer Skills*
2.2. Code	*CUE31024*
2.3. Language:	*English*
2.4. (Theory) Lecturer **E-mail:** **Tel:** **Webpage, Google Classroom**	*Assistant Professor Dr.Lway Faisal Abdulrazak* ***lway.faisal@sulicihan.edu.krd*** *009647700616304* ***https://uni.sulicihan.edu.krd/qa/profile.php?id=64***
2.5. Practical/Seminar/ Laboratory/ Project Lecturer **e-mail:** **Tel:** **Webpage, Google Classroom**	*Assistant Professor Dr.Lway Faisal Abdulrazak* ***lway.faisal@sulicihan.edu.krd*** *009647700616304* ***https://uni.sulicihan.edu.krd/qa/profile.php?id=64***

3. Total estimated time (Teaching Hours per Semester)

Total Contact Hours:	**52**
Total Self Study Hours:	**83**
Total No. Hours:	**135**
ECTS:	**5.00**

No. of Weeks	Contact Hours					Self-Study					
	Theoretical	Practical	Lab.	Project	Visit	Quiz	Reading	Assignment	Report	Midterm Exam.	Final Exam.
1st Week (Registration)	-	-	-	-	-	-	-	-	-	-	-
2nd Week	2	2					2			10	20
3rd Week	2	2					2		4		
4th Week	2	2					2				
5th Week	2	2					2	2			
6th Week	2	2					2		4		
7th Week	2	2					2				
8th Week	2	2					2			10	
9th Week	2	2				2	2		4		
10th Week	2	2					2				
11th Week	2	2					2				
12th Week	2	2					2				
13th Week	2	2					2		1		
14th Week	2	2					2				
15th Week (Final Exam.)		-	-	-	-	-	-	-	-	-	-
16th Week (Final Exam.)	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**26**	**26**	**0**	**0**	**0**	**2**	**26**	**2**	**13**	**20**	**20**

4. Prerequisites (if applicable)

4.1 Curriculum-Related	*Computer Networks*
4.2 Skills-Related	*Computer Networking + Packet tracer lab*

5. Conditions (if applicable)

5.1. For the Theoretical	1. *Read and comprehend the textbook material.* 2. *Attend all the classes and take notes on class discussions.* 3. *Actively participate in class discussions and activities.* 4. *Submit all the assignments and the project on time.* 5. *Pass tests and quizzes.*

5.2. For the Practical	*All students are normally required to attend the Lab; take part in lectures through applying the exercises on the computer or as quizzes, and to implement projects.*

6. Cumulated Specific Competences

Professional Competencies	• *This curriculum fosters technical proficiency in computer networks, enabling students to configure, troubleshoot, and understand network components using tools like Packet Tracer.* • *Students develop problem-solving skills through hands-on labs, projects, and exercises, enabling them to analyze network issues and implement effective solutions.* • *Emphasizing collaboration, critical thinking, adaptability, and professional ethics, students gain the ability to work in teams, make informed decisions, adapt to emerging trends, and uphold ethical practices in network management.*
Transversal competences	• *Communication and Collaboration: The curriculum emphasizes the development of effective communication and collaboration skills, enabling students to work in teams, present their ideas, and engage in constructive discussions related to computer networks.* • *Information Literacy and Critical Thinking: Students enhance their information literacy skills, learning to evaluate and analyze network-related information from various sources critically. They develop the ability to think critically, assess network problems, and make informed decisions based on available data and evidence.*

7. Discipline Objectives (Based on the cumulated specific Competences)

7.1. General Objective	*After going through this lesson, you would be able to:* • *The general objective of the computer networking curriculum is to provide students with a comprehensive understanding of computer networks, including their components, protocols, and design principles, enabling them to build, manage, and secure networks effectively.* • *The curriculum aims to equip students with the necessary knowledge and skills to analyze network issues, troubleshoot problems, and implement solutions, while also fostering critical thinking, collaboration, and professional ethics in the field of computer networking.* •

8. Content

Week	***8.1. Theoretical-Number of Hours***	***Teaching methods***	***Observation***
1	Registration		
2	Overview of computer networks and their importance Packet Tracer Lab: Building a simple LAN using switches and routers	lecture	***1 lecture = 2 hours***

	Exercise: Quiz on network types and topologies		
3	OSI model and TCP/IP model Packet Tracer Lab: Configuring network protocols (TCP, UDP, IP) Project: Designing a network using OSI model layers	lecture,	***1 lecture = 2 hours***
4	Network devices and their functions Packet Tracer Lab: Configuring VLANs and inter-VLAN routing Exercise: Troubleshooting network device connectivity issues	lecture	***1 lecture = 2 hours***
5	IPv4 addressing and subnetting Packet Tracer Lab: Subnetting practice and IP addressing configuration Project: Designing subnets for a given network scenario	lecture	***1 lecture = 2 hours***
6	Routing protocols (RIP, OSPF, BGP) Packet Tracer Lab: Configuring dynamic routing protocols Exercise: Creating a static routing table for a network	lecture	***1 lecture = 2 hours***
7	Network security threats and measures Packet Tracer Lab: Configuring firewall rules and access control lists (ACLs) Project: Designing a secure network with VPN connectivity	lecture	***1 lecture = 2 hours***
8	TCP and UDP protocols Packet Tracer Lab: Analyzing TCP and UDP packet flows Exercise: Comparing TCP and UDP performance in a simulated network	lecture	***1 lecture = 2 hours***
9	Network design principles and best practices Packet Tracer Lab: Designing a scalable and reliable network Project: Designing a network for a real-world scenario with specific requirements	lecture	***1 lecture = 2 hours***
10	Wireless network fundamentals and mobile technologies Packet Tracer Lab: Configuring a wireless network and mobile devices Exercise: Analyzing signal strength and coverage in a wireless network	Lecture,	***1 lecture = 2 hours***
11	Network monitoring tools and techniques Packet Tracer Lab: Configuring SNMP for network management Project: Setting up a network monitoring system using open-source tools		
12	Network virtualization and Software-Defined Networking (SDN)	lecture	***1 lecture = 2 hours***

	Packet Tracer Lab: Implementing virtual networks and SDN controllers Exercise: Simulating network scaling and migration in a virtual environment		
13	DNS, email protocols, and file transfer protocols Packet Tracer Lab: Setting up DNS and email servers Exercise: Troubleshooting DNS resolution and email delivery issues	lecture	***1 lecture = 2 hours***
14	DNS, email protocols, and file transfer protocols Packet Tracer Lab: Setting up DNS and email servers Exercise: Troubleshooting DNS resolution and email delivery issues	lecture	***1 lecture = 2 hours***

9. Assessment

Type of Activity	*9.1. Assessment Criteria*[2]	*9.2. Assessment Type*	*9.3. Percentage of the final Grade*
9.4. Theoretical	Mid-term (30%)	Exam	***%30***
9.5. Practical/ Seminar/Laboratory	Final-Exam (40%)	Exam	***%40***
9.6. Activity during Semester	Quizzes (15%) + Assignment (15%)	Exam	***%30***

Theoretical Lecturer	***Dr.Lway Faisal***
Practice Lecturer	***Dr.Lway Faisal***

	Approved by the Curriculum development Committee:
1	*Asst. Prof. Dr. Lway Faisal Abdulrazak*
2	*Asst. Lec. Sadeer Dheyaa Abdulameer*
Head of the Department/ Dean	*Asst. Prof. Dr. Lway Faisal Abdulrazak*