Course Description Form

1. Course Name: Network Switching and Routing II	
2. Course Code: **CSCN3208**	
3. Semester / Year: Second/2024-2025	
4. Description Preparation Date: 1/9/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/45	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Rana Fareed Ghani Email: rana.f.ghani@uotechnology.edu.iq	
8. Course Objectives	
Course Objectives	The aim of this course is to provide students with a comprehensive understanding of the fundamental principles, protocols, and technologies involved in routing and switching within computer networks. This module typically aims to: 1. Understand Network Infrastructure: Teach students about the infrastructure of computer networks, including routers, switches, and their roles in data transmission. 2. Routing Protocols: Introduce students to various routing protocols used in networking, such as RIP, OSPF, and BGP. Students learn how routers communicate and exchange routing information to efficiently forward data packets. 3. Switching Concepts: Cover switching concepts like VLANs (Virtual Local Area Networks), STP (Spanning Tree Protocol), and switching algorithms. Students learn how switches forward traffic within local networks. 4. Network Design and Optimization: Equip students with knowledge and skills to design and optimize network topologies for efficiency, scalability, and reliability. Overall, the aim is to empower students with theoretical understanding and practical sk necessary to design, implement, manage, troubleshoot routing and switching solutions wi computer networks.
9. Teaching and Learning Strategies	

Strategy	1. Lectures: Traditional lectures delivered by instructors to introduce and explain theoretical concepts, principles, and technologies related to routing and switching. 2. Hands-on Labs: Practical lab sessions where students have the opportunity to configure routers, switches, and network devices in a simulated or real-world environment. This allows students to gain practical experience and reinforce theoretical concepts through hands-on experimentation. 3. Case Studies: Analysis of real-world case studies and scenarios involving routing and switching issues, allowing students to apply theoretical knowledge to practical problems and develop problem-solving skills. 4. Group Projects: Collaborative projects where students work in teams to design, implement, and troubleshoot network architectures and solutions. This encourages teamwork, communication, and critical thinking skills. 5. Simulations: Making use of network simulation software or virtualization platforms to simulate complex network environments, allowing students to experiment with different configurations, scenarios, and protocols in a safe and controlled setting. 6. Online Resources: Providing access to online resources such as video tutori interactive simulations, documentation, and forums to supplement classroom instruct and facilitate self-paced learning.

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**		**Learning method**	**Evaluation method**
			Theoretical	**Practical**		
1.	4	1,2,3,4,5,6,7	Virtual LANs	Simple VLANs using Packet Tracer	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
2.	4	1,2,3,4,5,6,7	Multiple Switch VLANs	Multiple Switch VLANs	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
3.	4	1,2,3,4,5,6,7	Trancking	Trancking	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
4.	4	1,2,3,4,5,6,7	Routing Information Protocol	RIP in Simple topology	1. Lectures 2. Hands-on Labs 3. Case Studies	quizzes, lab reports, practical demonstrations

					4. Group Projects 5. Simulations	
5.	4	1,2,3,4,5,6,7	Routing Information Protocol Operations	RIP Configuration	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
6.	4	1,2,3,4,5,6,7	Open Shortest Path First Protocol	Open Shortest Path First Protocol in Simple topology	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
7.	4	1,2,3,4,5,6,7	Open Shortest Path First Protocol Operations	Open Shortest Path First Protocol Configuration	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
8.	4		Border Gateway Protocol	Border Gateway Protocol	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
9.	4		Mid-Exam	Mid Exam		
10.	4	1,2,3,4,5,6,7	Quality of Service	Quality of service in Packet Tracer	1. Lectures 2. Hands-on Labs 3. Case Studies 4. Group Projects 5. Simulations	quizzes, lab reports, practical demonstrations
11.	4	1,2,3,4,5,6,7	Quality of Service	Quality of service in Packet Tracer	1. Lectures 2. Hands-on Labs 3. Case Studies	quizzes, lab reports, practical demonstrations

					4. Group Projects 5. Simulations	
12.	4	1,2,3,4,5,6,7	Review	Review		
13.	4	1,2,3,4,5,6,7	Review	Review		
14.	4		Exam	Exam		
15.	4		Exam			

16. Course Evaluation
Distributing the score out of 40 according to the tasks assigned to the student such as daily preparation, weekly topology achievement, written exams. 60 score for final exam.

17. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	1. Bruce Hartpence, "Packet Guide to Routing and Switching", O'Reilly Media, 2011. 2. Wendell Odom, CCNA 200-301 Official Cert Guide, Volume 1, Cisco Press, 2018. 3. Wendell Odom, CCNA 200-301 Official Cert Guide, Volume 2, Cisco Press, 2018.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	