

Jadara University		جامعة جدارا
Faculty of Information Technology		كلية تكنولوجيا المعلومات

COURSE DESCRIPTIONS

Faculty	Information Technology				
Department	Computer Networks and Cybersecurity			NQF level	7
Course Title	Computer Networks II	Code	509331	Prerequisite	509251
Credit Hours	3	Theory	3	Practical	0
Course Leader	Dr. Firas Zawaideh	E-mail	F.zawaideh@jadara.edu.jo		
Lecturers	-----	emails	-----		
Lecture time	Mon, Wed [14:30- 16:00]	Classroom	D310		
Semester	Fall 2024-2025	Production	2015	Updated	2024

Short Description

This course is considered as a continuation course for computer networks (1), Router Components, Layer-3 Routing, Metrics (Hop Count, Administrative Distance and Cost), Default Routes, Static vs. Dynamic Routing, Routing Algorithms, Classful vs. Classless Routing, Router Components, Interfaces vs Lines, Routing Convergence, Routing Loops, Loop Avoidance Mechanisms, Routing Table, Supernetting, Network Summarization. The course discusses protocols such as (RIPv1, RIPv2, IGRP, EIGRP and OSPF).

Course Objectives

To let students, acquire knowledge and understand about IP Routing in Networks, students should be able to perform tasks related to IP routing concepts and configuration.

Learning Outcomes

A. Knowledge - Theoretical Understanding

a1. **Illustrate** concepts and role of the IP routing in Computer Networks. (K1)

B. Knowledge - Practical Application

a2. **Apply** layer 3 IP routing protocols and its implementation. (K4)

C. Skills - Generic Problem Solving and Analytical Skills

b1. **Analyze** the functionality of computer networks. (S1)

D. Skills - Communication, ICT, and Numeracy

E. Competence: Autonomy, Responsibility, and Context

Teaching and Learning Methods

- Lectures

Assessment Methods

- Assessment of concepts understanding, analysis of concepts, and ability to compare and contrast.
- Assessment of skills (Use of algorithms, testing, and analysis)
- Midterm exam, Final exam, Quizzes, and class Assignments.

Course Contents					
Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1	3	a1	Syllabus, Course Schedule Ch1: Networking and Network Routing: IP Addressing (OSI Model, TCP/IP Model) Network Architectures, Network devices and Components, Router Architecture.	Face to Face	
2-4	9	a1, a2, b1	Ch2&Ch3: Routing Algorithms: Bellman–Ford and Dijkstra’s Algorithms: Distance Vector, and Link State Routing, Path Determination, Packet Forwarding, Basic Router Configuration, IP Routing Table, Convergence, default routing, Static and Dynamic Routing	Face to Face	Assignment
5	3	a1, a2, b1	Ch4. Network Flow: Description and Minimum Cost Routing, Load Balancing Average Delay	Face to Face	Quiz
6-8	9	a1, a2, b1	Ch5. IP Routing and Distance Vector Protocol Family: RIPv1, RIPv2, and EIGRP Protocols, Packet Format, Communication and Message Format	Face to Face	Assignment Quiz
MIDTERM EXAM					
9-11	9	a1, a2, b1	Ch6. IP Routing and Link State Protocol Family: OSPF and Integrated IS-IS Protocols, Packet Format, Link State Advertisement Types	Face to Face	Quiz
12 & 13	6	a1, a2, b1	Ch7. IP Traffic Engineering: Traffic and Performance Measures, Characterizing Traffic, Average Delay in a Single Link System	Face to Face	Quiz
14	3	a1, a2, b1	Ch9: Internet Routing: BGP: External BGP and Internal BGP	Face to Face	Quiz
Final EXAM					

Infrastructure	
Textbook	Network Routing: Algorithms, Protocols, and Architectures. Deepankar Medhi, by Elsevier Inc
References	CCNA Study Guide v2.71 – 2014 by Aaron Balchunas
Required reading	
Electronic materials	
Other	

Course Assessment Plan							
Assessment Method		Grade	CLOs				
			a1	a2	b1		
Midterm		30	8	15	7		
Coursework		20	5	10	5		
Final Exam		50	15	20	15		
Coursework assessment methods	Assignments			2	2		
	Case study						
	Discussion and interaction						
	Group work activities				3		
	Lab tests and assignments						
	Presentations			3			
	Quizzes			5	5		
Total		100	28	45	27		

Plagiarism
<p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).</p> <p>Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p>