

<b>Jadara University</b>		<b>جامعة جدارا</b>
Faculty of Information Technology		كلية تكنولوجيا المعلومات

### COURSE DESCRIPTIONS

<b>Faculty</b>	<b>Information Technology</b>				
<b>Department</b>	<b>Computer Networks and Cybersecurity</b>			<b>NQF level</b>	7
<b>Course Title</b>	Wireless and Cloud Networks	<b>Code</b>	509333	<b>Prerequisite</b>	509251
<b>Credit Hours</b>	3	<b>Theory</b>	3	<b>Practical</b>	0
<b>Course Leader</b>	Dr. Firas Zawaideh	<b>E-mail</b>	<a href="mailto:F.zawaideh@jadara.edu.jo">F.zawaideh@jadara.edu.jo</a>		
<b>Lecturers</b>	-----	<b>emails</b>	-----		
<b>Lecture time</b>	Sun, Tue 11:30_13:00	<b>Classroom</b>	<b>Lab C16</b>		
<b>Semester</b>	Fall 2024-2025	<b>Production</b>	2013	<b>Updated</b>	2024

#### Short Description

The aim of this course is to provide a deeper understanding of wireless networks and familiarizes students with data transfer over wireless media. Digital signal modulation and coding schemes, electromagnetic waves propagation and data decoding are considered. IEEE 802.11 (Wi-Fi) is a wireless data link-layer standards for wireless media. Students will learn wireless network design, operation and testing; wireless network equipment configuration, wireless network security

#### Course Objectives

- To let students, acquire knowledge and understand basics of wireless networks.
- Promote students' skills to analyze wireless computer networks.

#### Learning Outcomes

##### A. Knowledge - Theoretical Understanding

a1. **Illustrate** concepts and role of wireless and cloud Networks. (K1)

##### B. Knowledge - Practical Application

a2. **Plan** different wireless networks issues like layout, size, speed, and Security. (K2)

##### C. Skills - Generic Problem Solving and Analytical Skills

b1. **Analyze** the functionality of wireless networks and network performance measures. (S1)

##### D. Skills - Communication, ICT, and Numeracy

##### E. Competence: Autonomy, Responsibility, and Context

#### Teaching and Learning Methods

Lectures, students attend classes, ask questions, and participate in discussions, do the homework's, solve suggested questions.

#### Assessment Methods

There will be several assessment methods of evaluation the performance of the students such as attending and class participation, grading the quizzes; assignments; conducting the Midterm and the Final Exams.

Course Contents					
Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1&2	6	a1, a2	<b>Syllabus, Course Schedule;</b> <b>Ch.1: Fundamentals of Wireless:</b> Communications, Comparing Wired and Wireless Networks, Understanding Basic Wireless Theory, Frequency, Frequency Spectrum, Channels, Bandwidth, Phase, Amplitude, RF Power, Carrying Data Over an RF Signal, RF Standards,	Face to Face	
3&4	6	a1, a2,	<b>Ch.2-Ch.3. Basics of Wireless Networks:</b> Modulation, FHSS, DSSS, and OFDM principles, 802.11 Channel Use, IEEE 802.11 Standards, Interference, Co-Channel Interference, Effects of Physical Objects, Reflection, Absorption, Scattering, and Refraction.	Face to Face	Assignment Quiz
5&6	6	a1, a2, b1	<b>Ch.4-Ch.5. Antennas &amp; Types of Wireless Networks:</b> Wireless LAN Topologies, Basic Service Set, Distribution System, Extended Service Set, Independent Basic Service Set, 802.11 Frame Format, and Addressing.	Face to Face	Quiz
7&8	6	a1, a2, b1	<b>Ch.6 - Ch.7. 802.11 Frame Format:</b> Accessing the Wireless Medium, Carrier Sense, CSMA/CD, CSMA/CA, Collision Avoidance, Frame Types, Client Housekeeping, Passive scan, Active scan, AP Cell Size, Tuning Cell Size with Transmit Power, The Roaming Process, WLAN Channel Layout.	Face to Face	Assignment Quiz
<b>MIDTERM EXAM</b>					
9-11	9	a1, a2, b1	<b>Ch.14 Wireless Security Fundamentals:</b> Anatomy of a Secure Connection, Authentication, Message Privacy, Message Integrity, Intrusion Protection, Wireless Client Authentication Methods, Security Protocols	Face to Face	Quiz
12-14	9	a1, a2, b1	<b>Ch.14 Wireless Privacy and Integrity Methods,</b> Securing Management Frames with MFP, Configuring Wireless Security, Secure Routing, Cellular Network Vulnerability Analysis	Face to Face	Quiz
<b>FINAL EXAM</b>					

Infrastructure	
<b>Textbook</b>	CCNA Wireless 640-722 Official Cert Guide, David Hucaby, 2014 Cisco Systems, Inc.
<b>References</b>	Switching, Routing, and Wireless Essentials: 2020 Cisco Systems
<b>Required reading</b>	
<b>Electronic materials</b>	
<b>Other</b>	

Course Assessment Plan							
Assessment Method		Grade	CLOs				
			a1	a2	b1		
Midterm		30	7	15	8		
Coursework		20	5	10	5		
Final Exam		50	10	20	20		
Coursework assessment methods	Assignments			2	2		
	Case study						
	Discussion and interaction						
	Group work activities				3		
	Lab tests and assignments						
	Presentations			3			
	Quizzes			5	5		
<b>Total</b>		<b>100</b>	<b>22</b>	<b>45</b>	<b>33</b>		

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>