جامعة الإسراء
ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Wireless Networks

Course Number: 06043141

General Course Information:

Course title	**Wireless Networks**
Course number	**0608320,06043141,06044320**
Credit hours	**3 credit hours (theory)**
Education type	[Online (Synchronous, Asynchronous)], [Hybrid (Face-to-Face, Online (Synchronous, Asynchronous)], OR **[Face-to-Face]**
Prerequisites/corequisites	**Computer Networks[0608224]**
Academic Program	**Information and Cyber Security**
Program code	**08**
Faculty	**Faculty of Information Technology**
Department	**Information and Cyber Security**
Level of course	**Third Year**
Academic year /semester	**2020/2021, 2nd semester**
Awarded qualification	**B.Sc**
Other department(s) involved in teaching the course	**(CIS,CS, SE,CMS, ..)**
Language of instruction	**English**
Date of production/revision	**10/3/2022**

Course Coordinator:

Coordinator's name	**Coordinator's Name: Dr. Yousef Sharrab**
Office No	**Office No.: 4104**
Office Phone extension number	**Office Phone: 2495**
Office Hours	**Office Hours:** [13:00_14:00] Sun Tue Thu
Email	**Email:** sharrab@iu.edu.jo

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	Introduction to mobile and wireless networks. Designing computer networks to support computer mobility. Mobile network architecture. Wireless technologies and protocols. Wireless LAN standards. Models for indoor and outdoor mobile networks. Systems issues such as performance. Quality of service guarantees, reliability, and security in mobile computing environment. Hardware and access protocols for mobile networks. Mobile application protocols.
Arabic	مقدمة لشبكات المحمول واللاسلكية. تصميم شبكات الكمبيوتر لدعم التنقل الحاسوبي. هندسة شبكة المحمول. التقنيات والبروتوكولات اللاسلكية. معايير الشبكة المحلية اللاسلكية. نماذج لشبكات المحمول الداخلية والخارجية. قضايا الأنظمة مثل الأداء. ضمانات جودة الخدمة والموثوقية والأمان في بيئة الحوسبة المتنقلة. بروتوكولات الأجهزة والوصول لشبكات المحمول. بروتوكولات تطبيقات الهاتف المحمول.

Textbook: *Author(s), Title, Publisher, Edition, Year, Book website.*

Beard Cory Et.Al, William Stallings ,"Wireless Communication Networks and Systems", 5th Edition, Published 2016 by Pearson Education, ISBN-13: 978-1-292-10871-1, ISBN: 1-292-10871-1.

References: *Author(s), Title, Publisher, Edition, Year, Book website.*

1. Wireless and Mobile Network Architectures, Yi-Bing Lin, Imrich Chlamtac, John Wiley & Sons, 2000.
2. Data Communications and Networking: Behrouz A. Forouzan, McGrawHill, Third Edition.

Course Educational Objectives (CEOs):

1.	Outline the basics Issues, Concepts, and techniques in wireless network.	
2.	Explain wireless communication Principle and mobile Internet.	
3.	Identify and Explains the architecture and functions of wireless systems.	
4.	Build and demonstrate the major components in wireless LANs, WANs, WI-FI and Bluetooth networks and their protocols	
5.		

Intended Learning Outcomes (ILO's):

	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	**Relationship to CEOs**	**Contribution to PLOs**	**Bloom Taxonomy Levels***	**Descriptors****
A	**Knowledge and Understanding:**				
A1	Understand the fundamentals about wireless transmission and communication networks.	**1**	**2**	**1**	**K**
A2	Understand the basic ideas about wireless communication concepts and technologies and the principles of the wireless networks and mobile Internet.	**2**	**2**	**1**	**K**
A3	Be able to distinguish wireless systems components and functions and to understand the architecture and functions of wireless systems.	**3**	**2**	**1**	**KS**

B	**Intellectual skills:**				
B1	Gain intellectual skills with ability to use CISCO PACKET TRACER to identify wireless LANs, WANs, Bluetooth and Wi-Fi Networks	**4**	**2 , 6**	**5**	**S**
B2					
B3					
C	**Subject specific skills:**				
C1	**Implement, and evaluate a fully wireless solution in some application in the LAB.**	**4**	**2 ,6**	**5**	**S**
C2					
C3					
D	**Transferable skills:**				
D1	**Work in a group in order to implement and simulate Bluetooth and Wi-Fi Wireless computer networks.**	**4**	**2, 4,5,6**	**5**	**C**
D2					
D3					

***Bloom Taxonomy Levels**

Level #	**1**	**2**	**3**	**4**	**5**	**6**
Level Name	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Evaluation**	**Synthesis**

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (_____) program will demonstrate:		Descriptors**		
		K	S	C
1.	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	X		
2.	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.		X	
3.	Communicate effectively in a variety of professional contexts.			X
4.	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.			X
5.	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.			X
6.	Apply security principles and practices to maintain operations in the presence of risks and threats. [CY]		X	
7.				
8.				
9.				
10				
11				

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Weekly Schedule *(please choose the type of teaching)*

√ **Face to Face**

□ **Hybrid** *(**2 Lectures** Face – To - Face **+1 Lecture** Asynchronous)*

□ **Hybrid (***1 Lectures* Face – To - Face ***+1 Lecture*** Asynchronous)

□ **Online** *(**2 Lectures** Synchronous **+1 lecture Asynchronous**)*

Week	First Lecture (……)	Second Lecture (……)	Third Lecture (……)	Ach. ILOs	Ach. PLOs	Descriptors**
1	WLAN Introduction, Antennas and Propagation, Signal Encoding Techniques 1	WLAN Introduction, Antennas and Propagation, Signal Encoding Techniques 2	WLAN Introduction, Antennas and Propagation, Signal Encoding Techniques 3 –Lecture3	A1, A2	2	K
2	Spread Spectrum 1	Spread Spectrum 2	Spread Spectrum 3 –Lecture3	A1, A2	2	K
3	Cellular Wireless Networks 1	Cellular Wireless Networks 2 –Lecture2	Cellular Wireless Networks 3 –Lecture3	A1, A2	2	K
4	Mobile IP and Wireless Access Protocol 1 Mobile IP	Mobile IP and Wireless Access Protocol 2 Mobile IP –Lecture3	Mobile IP and Wireless Access Protocol Mobile IP 3 –Lecture3	A2, A3, A4	2	K
5	Mobile IP and Wireless Access Protocol Mobile IP - Lecture1	Mobile IP and Wireless Access Protocol Mobile IP 2 –Lecture2	Mobile IP and Wireless Access Protocol Mobile IP 3 –Lecture3	A2, A3, A4	2	K
6	Wireless LAN Technology - Lecture1	Wireless LAN Technology 2 –Lecture2	Wireless LAN Technology 3 –Lecture3	A2, A3, A4	2	K
7	LAB Task – Lab1	LAB Task – Lab-b	LAB Task 1c-Lab-c	B1 C1 D1	2,5	S
8	Wi-Fi and the IEEE 802.11 Wireless LAN Standard - Lecture1	Wi-Fi and the IEEE 802.11 Wireless LAN Standard 2 –Lecture2	Wi-Fi and the IEEE 802.11 Wireless LAN Standard 3 –Lecture3	A2, A3, A4	2	K
9	Wi-Fi and the IEEE 802.11 Wireless LAN Standard - Lecture1	Wi-Fi and the IEEE 802.11 Wireless LAN Standard 2 –Lecture2	Wi-Fi and the IEEE 802.11 Wireless LAN Standard 3 –Lecture3	A2, A3, A4	2	K
10	IEEE 802.11 Physical Layer Other IEEE 802.11 -Lecture1	IEEE 802.11 Physical Layer Other IEEE 802.11 Standards 2 –Lecture2	IEEE 802.11 Physical Layer Other IEEE 802.11 Standards 3 –Lecture3	A2, A3, A4	2	K
11	IEEE 802.11 Physical Layer Other IEEE 802.11 -Lecture1	IEEE 802.11 Physical Layer Other IEEE 802.11 Standards 2 –Lecture2	IEEE 802.11 Physical Layer Other IEEE 802.11 Standards 3 –Lecture3	A2, A3, A4	2	K
12	IEEE 802.11a and IEEE 802.11b - Lecture1	IEEE 802.11a and IEEE 802.11b 2 –Lecture2	IEEE 802.11a and IEEE 802.11b –Lecture3	A2, A5	2	K

13	LAB Task 2- Lab2-a	LAB Task 2 - Lab2-b	LAB Task 2 -Lab2-c	B1, C1 D1	2,4,5, 6	S
14	Bluetooth and IEEE 802.15 - Lecture1	Bluetooth and IEEE 802.15 –Lecture2	Bluetooth and IEEE 802.15 –Lecture3	A2, A5	2	K
15	Bluetooth and IEEE 802.15 - Lecture1	Bluetooth and IEEE 802.15 –Lecture2	Bluetooth and IEEE 802.15 –Lecture3	A2, A5	2	K

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- **Interactive videos**
- **Practice Labs**
- **Discussion Forums**
- **Quizzes**
- **Other Interactive online activities**
- **Reports**

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: https://elearn.iu.edu.jo/**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:…….

Responsible Persons and their Signatures:

Course Coordinator	**Dr. Yousef Shrrab**	**Completed Date**	**10/ 3 / 2022**
		Signature	*Sharrab*

Received by (Department Head)		**Received Date**	/ /
		Signature	