Course Name	se Name Security in IoT & Wireless Networks			أمن إنترنت الأشياء والشبكات اللاسلكية			
<b>Course Information</b>		Course Code	Course No.	Credit Hour	Prerequisite(s)		
		0914634	CN 634	3 (3-0-6)	0914612		
Course Track Program Core Electives							

## **Course Description**

This course introduces the fundamentals and state of the art in wireless network security. The course will cover wireless vulnerabilities and attacks at various layers of the protocol stack, from the physical layer up to the application layer and include service security issues. The first part of the course addresses conventional wireless networks and begins by introducing the wireless security basics and physical layer security including wireless electronic warfare: jamming, anti-jamming, source localization and target-tracking. Subsequently, link-layer threats are discussed including wireless encryption, selfish and malicious behavior. Wireless multihop networks are explored from network security, privacy, trust, and reputation perspective along with attacks such as black hole, flooding, Sybil, and warm hole. The course briefly addresses security aspects in cellular networks. The second part of the course focuses on vulnerabilities, attacks and countermeasures for the Internet of Things (IoT) ecosystem including IoT security architecture, security classification, IoT privacy, authentication and authorization, cloud integration, attacks and mitigation strategies, and techniques for IoT communication and applications.

## **Course Outcomes**

After the completion of this course, the student will be able to:

- 1. Describe security architecture of different wireless networks. [A]
- 2. Analyze existing security mechanisms of enterprise wireless networks. [B]
- 3. **Propose** appropriate and efficient security mechanisms to secure enterprise wireless networks. [D]
- 4. Describe the security and privacy issues and threats for Internet of Things. [A]
- 5. Identify and justify security countermeasures against attacks in Internet of Things. [A]

Assessment	Assignments	15%	Quiz	20%	Project	-				
Policy	Midterm	25%	Final	40%	Others	-				
	Matthew S. Gast, "802.11 Wireless Networks: The Definitive Guide: Enabling									
Textbook	Mobility with Wi-Fi Networks", 3rd Edition, O'Reilly Media, 2018. ISBN-13: 978-									
	1491963548.									
	1. Lei Chen, Jiahuang Ji, Zihong Zhang, "Wireless Network Security: Theories and									
References	Applications", 1st Edition, Springer, 2013. ISBN-13: 978-3642365102.									
	2. Brian Russe	ll, "Practical I	nternet of Thir	ıgs Secu	<i>writy</i> ", 1 <sup>st</sup> Edition	ı, Packt				
	Publishing, 2016. ISBN-13: 978-1785889639.									