

Jordan University of Science & Technology		
Faculty of Computer & Information Technology		
Year: 2015/2016	Department of Network Engineering & Security	Semester: 2 nd (Spring)

Course Information	
Course Title	Wireless Networking Protocols
Course Number	NES 540
Prerequisites	NES 440: Wireless Networks
Course Website	http://elearning.just.edu.jo/
Instructor	
Office Location	
E-mail	
Office Hours	

Catalog Description
Challenges and latest solutions in wireless and mobile networks, and ad-hoc and wireless sensor networks, focusing on routing, auto-configuration, clustering, topology management, quality of service (QoS), reliable transport, energy conservation, mobility management, MAC, and service discovery. Existing and proposed standards, and current research projects in this field.

Text Books & References	
Text books	We will use selected chapters from different books (to be provided to the students electronically when necessary). The main references are: <ol style="list-style-type: none"> 1. Mobile Ad Hoc Networks: Current Status and Future Trends, Jonathan Loo, Jaime Lloret Mauri, and Jesús Hamilton Ortiz, CRC Press. 2. Fundamentals of Wireless Sensor Networks: Theory and Practice, Walteneagus Dargie and Christian Poellabauer, John Wiley & Sons.
Other references	<ol style="list-style-type: none"> 1. Protocols and Architectures for Wireless Sensor Networks, Holger Karl and Andreas Willig, John Wiley & Sons. 2. Wireless Ad Hoc Networking - Personal-Area, Local-Area, and the Sensory-Area Networks, Shih-Lin Wu and Yu-Chee Tseng, Auerbach Publications.

Assessment Policy		
Assessment	Date	Weight
First Exam	Around the 6 th week	15%
Second Exam	Around the 12 th week	15%
Presentations	5 th and 10 th weeks	8%
Assignments	TBD	6%
Term Project/Paper	TBD	16%
Final Exam	Scheduled by A & R	40%
Total		100%

Course Objectives	Weights
This course is designed to help the students:	
1. Learn the concepts and terminology of mobile ad hoc and wireless sensor networks.	10%
2. Identify challenges in mobile ad hoc and wireless sensor networks.	10%
3. Acquire a fundamental understanding of mobile ad hoc and wireless sensor nodes, networks, architectures, protocols, and applications.	50%
4. Investigate the state-of-the-art by presenting outstanding research papers.	15%
5. Understand the basics of recent mobile and wireless data communication standards.	15%

Teaching & Learning Methods
<ul style="list-style-type: none"> ▪ Lectures, lecture notes, and assignments are designed to achieve the course objectives. ▪ Students are expected to read the material as detailed in the references and notes, complete the assignments/project on time, and participate in class. ▪ Course web page is an essential part of the course.

Learning Outcomes		
Related Objective(s)	This course requires the student to demonstrate the following:	Reference(s)
1, 2	1. Define the main routing protocols and their applicability to different wireless networks topologies	Ch. 1, 3 in 1 Ch. 1 in 2
3	2. Define main challenges to routing and MAC protocols in MANETs	Ch. 4 in 1
4	3. Define main challenges to routing and MAC protocols in WSNs	Ch. 6, 7 in 2
5	4. Designing optimal topology to provide a trade-off between latency and complexity in MANETs and WSNs	Ch. 4 in 1,, Ch. 10 in 2
5	5. Understands and critique of state-of-the-art articles to enhance their critical thinking and provide solutions	Project/paper

Course Content		
Week	Topics	Chapter in Text
1 + 2	Introduction to mobile ad hoc and wireless sensor networks.	Ch1 in 1 & Ch1 in 2
3	Challenges and applications.	Ch1 in 1 & Ch2 in 2
4 + 5 + 6	Mobile ad hoc routing protocols.	Ch2 & Ch4 in 1
6	Wireless sensor network node architecture.	Ch3 in 2
7 + 8	Wireless sensor network MAC protocols.	Ch6 in 2
9 + 10	Wireless sensor network routing protocols.	Ch7 in 2
11	Wireless localization / location identification	Ch10 in 2
12 + 13	Presenting research paper summaries	TBD
14 + 15	Presenting research paper critiques	TBD
16	Review and evaluations	

Essential Notes	
Exams	<ul style="list-style-type: none"> ▪ May include: True/False, Multiple-Choice, Analysis, Design, and Descriptive formats. ▪ Use only your own tools: calculator, pens, and ruler. ▪ Instructions on the first page of the exam are quite important. ▪ Not abiding by the rules is a reason for dismissal from the exam.
Makeups	<ul style="list-style-type: none"> ▪ Makeup exam should not be given unless there is a valid excuse.
Drop Date	<ul style="list-style-type: none"> ▪ Last day to drop the course is before the twelve (12th) week of the semester.
Cheating	<ul style="list-style-type: none"> ▪ Standard JUST policy will be applied.
Attendance	<ul style="list-style-type: none"> ▪ Excellent attendance is expected. ▪ According to the JUST policy, a student will receive the grade of ZERO (35%) “failed for absence” if he misses more than 20% of the classes. ▪ Attendance will be taken by calling, passing a sign-up sheet, or through quizzes. ▪ If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed. ▪ It is necessary to pass the lab for successful completion of the course
Workload	<ul style="list-style-type: none"> ▪ Average work-load student should expect to spend around 10 hours/week.
Graded Exams	<ul style="list-style-type: none"> ▪ Graded exam papers will be returned within a week.
Participation	<ul style="list-style-type: none"> ▪ Participation in the class will positively affect your performance. ▪ Disruption and side talks will possibly result in dismissal from class. ▪ No eating or chewing gums are allowed in class.