Jordan University of Science and Technology

Faculty of Computer & Information Technology

Network Engineering And Security Department

NES741 Advanced Wireless Networks - JNQF Level: 9
Second Semester 2023-2024

Course Catalog
3 Credit Hours. This is an advanced-level course on wireless networks and its recent challenges and developments. It covers the principles of recent wireless networking technologies with emphasis on algorithms, protocols, and implementation aspects of advanced wireless services. Most of the course material will be covered via state-of-the-art research papers.
Teaching Method: Blended

Text Book	
Title	Protocols and Architecture for Wireless Sensor Networks
Author(s)	Holger Karl, Andreas Willig
Edition	1st Edition
Short Name	Ref #1
Other Information	Wiley, 2005

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Ad Hoc Wireless Networks : architectures and protocols	C. Silva Ram Murthy, B.S. Manoj,	1st Edition	Prentice Hall , 2004.
Ref #3	Guide to wireless communication	Jorge Olenewa	2nd Edition	Thomson 2007

Instructor	
Name	**Dr. Omar Banimelhem**
Office Location	C5L2

Office Hours	Sun : 15:00 - 16:00 Tue : 11:30 - 14:00 Wed : 12:00 - 13:00 Thu : 11:30 - 14:00
Email	omelhem@just.edu.jo

Class Schedule & Room
Section 3: Lecture Time: Sun : 12:00 - 13:30 Room: NES01-E1L3

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Introduction	
Weeks 3, 4	WSN and IoT	
Weeks 5, 6	Fog computing and Edge computing	
Weeks 7, 8, 9, 10	Cellular networks and generations, 5G, 6G	
Week 11	Recent topics in wireless networks	
Weeks 12, 13, 14, 15	Project/Term paper presentations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To understand the state-of-the-art in wireless network protocols, architectures and applications. [1MSO4] [1L9K2]	25%	
Analyze existing wireless networks and protocols [1MSO4] [1L9C2]	15%	
Develop new ideas in wireless networking field [1MSO4] [1L9K2]	15%	
To understand how wireless networking research is done [1MSO4] [1L9K2]	15%	
To investigate novel ideas in the area of wireless networking via term-long research projects. [1MSO4] [1L9C2]	30%	

Relationship to Program Student Outcomes (Out of 100%)													
SO1	SO2	SO3	SO4	SO5	SO6	SO7	MSO1	MSO2	MSO3	MSO4	MSO5	MSO6	MSO7
										100			

Relationship to NQF Outcomes (Out of 100%)	
L9K2	L9C2
55	45

Evaluation	
Assessment Tool	**Weight**
Midterm Exam	15%
Final Exam	40%
Project	45%

Policy	
Academic Integrity	It goes without saying that the highest level of academic integrity is expected for students in this class. While discussions on the analysis of problems and on the development of general solution approaches is welcome (encouraged, in fact), the idea has to be of the individual student or of the individual project team. Spelled out, this means: - For the project: Do not make design documents or code available to other teams. Do not use other teams' design documents or code. Do not copy someone else's idea from the Internet. - Whoever violates these rules should expect to fail this course.
Attendance	- Excellent attendance is expected. - JUST policy requires the faculty member to assign ZERO (35%) if a student misses 10% of the classes that are not excused. - Attendance will be taken by calling or by signing on a sheet. - If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed.
Workload	Average work-load student should expect to spend about 400- 500 minute /week.
Graded Exams	There will be one Midterm exam and a final exam. The goal of these exams is to help the student grasp the fundaments of today's wireless networking.
Project	- There will be a research oriented project, which could be used for MS project or thesis. More information about projects will be posted soon. - The project will be done by a group of two students. This means that it is a good idea to start looking for a partner soon. - High-quality projects will merit bonus points.
Participation	- 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.

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