Jordan University of Science and Technology

Faculty of Engineering

Electrical Engineering Department

EE559 Wireless And Mobile Communications

Second Semester 2022-2023

Course Catalog
3 Credit Hours. Overview of wireless communications. Cellular systems: principles, trunking, grade of service and traffic capacity, power control, and handovers. Characterization of wireless channels: large scale and small scale propagation mechanisms, path loss, multipath and fading. Digital modulation techniques for wireless channels. Power efficiency, nonlinear amplifiers, diversity. Performance in multipath fading channels. Multiple access: fixed (FDMA, TDMA, CDMA) and random (ALOHA, CSMA) access methods.

Text Book	
Title	Wireless Communications: Principles and Practice
Author(s)	Theodore S. Rappaport
Edition	2nd Edition
Short Name	Ref-1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref	Wireless communications and networking	Vijay Kumar Garg	1st Edition	
Ref-3	Principles of Mobile Communication	Gordon L. Stuber	4th Edition	

Instructor	
Name	**Dr. Mohammad Banat**
Office Location	E1L3
Office Hours	Sun : 10:30 - 11:30 Mon : 11:30 - 14:30 Tue : 10:30 - 11:30 Wed : 11:30 - 14:30
Email	banat@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 09:30 - 10:30 Room: G2123 Section 2: Lecture Time: Mon : 08:30 - 10:00 Room: LAB

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
245511	EE551A Digital Communications	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction to Wireless communication systems	From **Ref-1**
Weeks 2, 3, 4	Cellular Systems Design Fundamentals	From **Ref-1**
Weeks 5, 6, 7	Mobile Radio Propagation, Fading and Multipath	From **Ref-1**
Weeks 8, 9	Modulation techniques for mobile radio systems	From **Ref-1**
Weeks 10, 11	Diversity techniques for mobile radio systems	From **Ref-1**
Weeks 12, 13	Multiple access techniques for mobile systems	From **Ref-1**
Weeks 14, 15	Mobile Systems and Standards	From **Ref-1**
Week 16	Next Generation Wireless Communications	From **Ref-1**

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understanding the cellular conept [1ABET1, 1ABET2]	10%	
Ability to apply understanding of cellular concept in solving traffic and coverage problems [1ABET1, 1ABET2]	10%	
Understanding wireless channel characteristics [1ABET1, 1ABET2]	10%	
Ability to understand and apply mathematical models of wireless channels [1ABET1, 1ABET2]	15%	
Ability to use the gained knowledge in analyzing the performance of digital modulation techniques over wireless channels [1ABET1, 1ABET2]	15%	
Understanding the principles and different types of multiple access [1ABET1]	10%	
Understanding the use of multiple access techniques in wireless communications [1ABET1]	10%	

Understanding the role of standardization in wireless communications [1ABET1]	10%	
Conduct a research on a topic related to mobile/wireless systems, write a technical report, and give an oral presentation on the results of the research through term projects [1ABET3]	10%	

Relationship to Program Student Outcomes (Out of 100%)						
ABET1	ABET2	ABET3	ABET4	ABET5	ABET6	ABET7
60	30	10				

Evaluation	
Assessment Tool	**Weight**
Term Project	25%
Mid-Term Exam	25%
Final Exam	50%

Policy	
Hybrid Course	This is usually offered as a hybrid course. Fifty per cent of classes are usually given remotely.
Multiple Choice Exam Questions	In multiple choice exam questions, marking more than one answer is strictly unallowed. A zero mark is given on any question with more than one answer marked.

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