

2nd Semester – A.Y. 2020/2021

Course:	Communicati	on Systems – 0903425	(3 Cr. – Elective Course)			
Instructor:	Dr. Raed Al-Zubi Office: E306, Telephone: 06/5355000 ext 22857, Email: r.alzubi@ju.edu.jo Office Hours: Will be posted soon					
Course	http://elearning.ju.edu.jo/					
Catalog description:	Review of voice and data Communications. Line transmission and voice companders. Waveform shaping and data generation. Multiple access techniques: TDMA, FDMA, CDMA and hybrid systems. Propagation models and antennas. Broadcasting systems. Analog and digital TV systems. AM and FM broadcasting. Microwave and optical fiber links. Satellite communications. Satellite transponders, link budget calculation. GPS Systems: satellite configuration, timing signals, modulation and location calculations.					
Prerequisites by course:	EE	0953421 Communicatio	ons (I)	(pre-requisite)		
Prerequisites by topic:	Students are assumed to have a background in the following topics:• Analog and digital modulation and demodulation.• Signal representation and analysis techniques.					
Textbook:	Telecommunications Crash Course by Steven Shepard, McGraw-Hill Education, 3rd Edition, 2014.					
References:	1.	Wireless Crash Course: McGraw-Hill, 3rd Edition,	A Real World Perspective 2012.	by Paul Bedell,		
	2.	Telecom Systems, PSTN, PBX, Datacom, IP Telephony, IPTV, Wireless and Billing by Mr. Lawrence Harte and Avi Ofrane, DiscoverNet, 1st Edition, 2006.				
	3.	Modern Telecommunications: Basic Principles and Practices by Martin J N Sibley, CRC Press, 1st Edition, 2018.				
	4.	The Essential Guide to Telecommunications by Annabel Z. Dodd, Prentice Hall, 6th Edition, 2019.				
	5.	Satellite Communications Payload and System by Teresa M. Braun, Wiley-IEEE Press, 1st edition, 2013.				
	6.	Satellite Communications Systems Engineering: Atmospheric Effects, Satellite Link Design and System Performance by Louis J. Ippolito Jr., Wiley, 2nd Edition, 2017.				
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	7.	Satellite Systems, Signals Press, 1st Edition, 2015.	ed Navigation and Timing: G s, and Receivers by John W. E	lobal Navigation Betz, Wiley-IEEE		

Schedule: 16 Weeks, 42 lectures (50 minutes each) plus exams.

Course goals: The overall objective is to introduce the student to various popular wireless technologies and communication systems.

Course learning outcomes (CLO) and relation to ABET student outcomes (SO):

Upon :	successful completion of this course, a student will:	[SO]
1.	Understand the fundamental and some advanced transmission techniques used in communication systems.	[1]
2.	Understand the different propagation models for radio channels.	[1]
3.	Be able to evaluate and calculate radio communication channel parameters and losses.	[1]
4.	Be able to analyze and design the link budget of a wireless communication system.	[1, 2]
Cours	Se s	Hrs
1.	Radio wave propagation and its mathematical models.	9
2.	Multiplexing and multiple-access techniques.	8
3.	Microwave communication system, system gain, and link-budget calculations.	8
4.	Satellite communication systems and GPS.	7
5.	Modern wireless networks: Bluetooth, ZigBee, WiMAX, Wi-Fi, infrared wireless, near-field communications, ultrawideband.	8
6.	Cognitive radio, Internet of Things.	2

Ground rules: Attendance is required and highly encouraged. To that end, attendance will be taken every lecture. Eating and drinking are not allowed during class, and cell phones must be set to silent mode. All exams (including the final exam) should be considered cumulative. Exams are closed book. No scratch paper is allowed. You will be held responsible for all reading material assigned, even if it is not explicitly covered in lecture notes.

			Total	100%
	Final Exam	40%	Presentation	0%
	Midterm Exam	30%	Lab Reports	0%
grading policy:	First Exam	30%	Projects	0%
Assessment &	Assignments	0%	Quizzes	0%

Last Revised:

March 2021