



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401421	Communications (1)	3	3 T

INSTRUCTOR/COORDINATOR

Name	Dr. Amneh Al-Mbaideen
Email	a.mbaideen@mutah.edu.jo dr.a.almbaideen@gmail.com
Office Hours	

TEXTBOOK

Title	<ol style="list-style-type: none">"Principles of Communications", R. E. Ziemer and W. H. 6th International student edition, John Wiley & Sons Ltd, 2010"Communication Systems: An Introduction to Signals and Noise in Electrical Communication," A. Bruce Carlson and Paul B. Crilly, McGraw-Hill, 2010, 5th International edition
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Other Supplemental Materials

Title	<ol style="list-style-type: none">"Digital and Analog Communication Systems," Leon W. COUCH II, 6th Edition, Prentice-Hall, 2001. "Communication Systems," S. Haykin, 4th Edition, Prentice-Hall, USA 2001."Communication Systems: An introduction to Signals and Noise in Electrical Communication," A. B. Carlson, P.B. Crilly, J. C. Rutledge, Mc Graw Hill, 2002."Communication Systems Engineering," G. Proakis and M. Salehi, McGraw-Hill, USA 2002."Communication Systems Using MATLAB," G. Proakis and M. Salehi, Brooks and Cole, USA 2000.
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SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

This course provides the principles for Continuous-wave (CW) modulation: Amplitude Modulation (AM), Frequency Modulation (FM), and Phase Modulation (PM). Bandwidth estimation. AM and FM transmitters and receivers. Noise sources and noise representation in CW modulation. Signal-to-Noise Ratio (SNR). Introduction to Pulse modulation techniques: PAM, PWM, and PPM. Frequency Division Multiplexing (FDM) and Time Division Multiplexing (TDM)

B. Pre-requisites (P) or Co-requisites (C)

Signals and Systems (0401208) (P)

Electronics (1) (0401261) (P)

C. Course Type (Required or Elective)

Required

SPECIFIC GOALS

A. Course Learning Outcomes (CLOs)

CLO1: Understand the importance of the frequency domain in the analysis of the communication systems [1].

CLO2: Understand the concepts of the linear and analog modulations [1].

CLO3: Understand the concepts of the Angle modulation [1].

CLO4: Understand the Sampling theorem and the concepts of the Pulse modulation [1].

CLO5: Understand different types of multiplexing methods [1].

CLO6: Understand and evaluate the performance of the Analog modulation techniques in the White Gaussian Noise presence [1].

B. Student Learning Outcomes (SOs) Addressed by the Course

1	2	3	4	5	6	7
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BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Chapter 1: Introduction to Communication Systems	1	3
Chapter 2: Frequency domain analysis (Fourier transform and its property), Frequency-shifting (translation), Bandwidth, power and Energy spectral density. Hilbert Transform	2	6
Chapter 3: Linear Modulation Techniques	3	9
Chapter 4: Angle Modulation	3	9
Chapter 6 TX 2: Sampling and Pulse Modulation	3	9
Chapter 7 TXT 2: Multiplexing Systems	1	3
Chapter 7+8: Noise in Analog Modulation Systems	1	3

EVALUATION		
Assessment Tool	Due Date	Weight (%)
Mid Exam	According to the university calendar	30
Course Work (Homeworks, Quizzes, Projects, ...etc.)	One week after being assigned	20
Final Exam	According to the university calendar	50

ABET's Students Learning Outcomes (Criterion # 3)		
Relationship to program outcomes		
ABET 1-7	Engineering Student Outcomes	
1	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2		an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3		an ability to communicate effectively with a range of audiences.
4		an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5		an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6		an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7		an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.