



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401523	Digital Communications & Communication Systems Lab	1	2 T

INSTRUCTOR/COORDINATOR

Name	Dr. Rula Alrawashdeh
Email	rular18@mutah.edu.jo rularsr18@gmail.com
Office Hours	14:00-17:00 (Mon)

TEXTBOOK

Title	Lab Sheets
Author/Year/Edition	
Other Supplemental Materials	
Title	
Author/Year/Edition	

SPECIFIC COURSE INFORMATION

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

This laboratory is important for engineers wishing to emphasize the communications area. This course provides practical hands-on exposure to digital communication system building blocks, such as sampling, PCM and digital modulators, and enables students to study the effects of noise on communication systems. Communications is a highly important and growing field and students should have opportunity to gain familiarity with communication test equipment and measurement techniques.

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

Communication Systems (0401522) (P)

C. Course Type (Required or Elective)

Required

SPECIFIC GOALS

A. Course Learning Outcomes (CLOs)

By the end of this course, the student should be able to:

CLO1: Understand basic theories of Digital communication system in practical with the ability of visualization and practical implementation of Sampling, Quantization, and coding [6].

CLO2: Analyze and implement analogue to digital converters like PCM, DM [6].

CLO3: Demonstrate an understanding of Digital Modulation and demodulation schemes (ASK, FSK, PSK and DM) [6].

CLO4: Demonstrate an understanding of the relation between channel capacity, probability of error and signal to noise ratio and bandwidth [6].

CLO5: Work effectively in groups by sharing responsibilities and collaborating on findings [5].

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

1	2	3	4	5	6	7
				✓	✓	

BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Experiment 1: Pulse Modulation Trainer Familiarization.	1	2
Experiment 2: Sampling and signal reconstruction	1	2
Experiment 3: Pulse Amplitude Modulation Principles (PAM)	1	2
Experiment 4: Two-Channel (TDM) of PAM signals	1	2
Experiment 5: Pulse-Code Modulation Trainer Familiarization.	1	2
Experiment 6: Pulse-Code Modulation Encoding Process.	1	2
Experiment 7: Pulse-Code Modulation Decoding Process	1	2
Experiment 8: Delta Modulation Familiarization.	1	2
Experiment 9: The Delta Modulation Encoding Process.	1	2
Experiment 10: The Delta Modulation Decoding Process	1	2
Experiment 11: Digital Modulation Trainer Familiarization.	1	2
Experiment 12: Principles of Frequency Shift Keying.	1	2
Experiment 13: Principles of amplitude shift and phase shift keying.	1	2
Experiment 14: Principles of carrier synchronization for ASK and PSK signals	1	2
Total	14	28

EVALUATION		
Assessment Tool	Due Date	Weight (%)
Reports	After each experiment	40
Course Work (Homeworks, Quizzes, Projects, ...etc.)	One week after being assigned	20
Final Exam	According to the university calendar	40

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.