



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus – 2nd Semester 2021/2022

Course Code	Course Name	Credits	Contact Hours
0401528	Radar Engineering	3	3 T

INSTRUCTOR/COORDINATOR

Name	Dr. Rula S. Alrawashdeh
Email	rular18@mutah.edu.jo rularsr18@gmail.com
Office Hours	13:00-14:00 (Sun, Tues, Thur)

TEXTBOOK

Title	Introduction to Radar Systems
Author/Year/Edition	Merrill I. Skolnik/2007/ 2rd Ed
Other Supplemental Materials	
Title	Radar Principals, Technology, Applications
Author/Year/Edition	Byron Edde/ 2004/1st Edition

SPECIFIC COURSE INFORMATION

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

Radar Equation, Radar principles of operation. Radar performance in noise and clutter, Minimum detectable pulse repetition frequency-Ambiguity diagram Doppler effect and its application in radar and navigation systems. MTI and tracking radar Radar transmitters and electronically steerable antennas, laser radars.

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

Microwave Engineering (0401453)

C. Course Type (Required or Elective)

Elective

SPECIFIC GOALS

A. Course Learning Outcomes (CLOs)

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

CLO1: Understand DC Fundamentals of Radar, different types of radar and their working [1]

CLO2: Identify the elements of radar transmitter and of radar receiver [1].

CLO3: Understand the use of Doppler frequency shift to detect moving target in stationary clutter [1].

CLO4: Understand different types of radars, CW, MTI, Pulse doppler, and tracking radars [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: Basics of Radar	4	12
Chapter 2: CW and Frequency Modulated Radar	3	9
Chapter 3: MTI and Pulse Doppler Radar	3	9
Chapter 4: Detection Of Radar Signals In Noise	4	12
<i>Total</i>	<i>14</i>	<i>42</i>

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.