



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401552	Antennas and Waves Propagation	3	3 T

INSTRUCTOR/COORDINATOR

Name	Dr.Rula Alrawashdeh
Email	rular18@mutah.edu.jo rularsr18@gmail.com
Office Hours	11:00 am-12:30 pm (Mon, Wed)

TEXTBOOK

Title	Antenna theory analysis and design
Author/Year/Edition	Constantine A. Balanis/2009/ 3rd Ed
Other Supplemental Materials	
Title	Antennas from theory to practice
Author/Year/Edition	Yi. Huang and Kevin Boyle/ 2008/3rd Edition

SPECIFIC COURSE INFORMATION

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

The following subjects are discussed in this course:

Mechanism of radiation, antennas in the communication system, antennas fundamental parameters, wire-type antennas, aperture- type antennas, propagation in air and link budget calculations, basics of arrays.

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

Fields and Wave (0401353) (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 the basic parameters and properties of antennas [1].

CLO2: Calculate the antenna gain, directivity, radiation efficiency, Half-power beam-width and the first-null beam-width [1].

CLO3: Design different antenna types such as microstrip and horn antennas [2].

CLO4: Understand the principle of antennas arrays [1].

CLO5: Analyze and present the simulation data using the CST simulation tool [7].

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
Chapter 1: Principle of radiation.	1	3
Chapter 2: Fundamental parameters of antennas	3	9
Chapter 3: Wire-type antennas	3	9
Chapter 4: Aperture-type antennas	3	9
Chapter 5: Propagation in air, path loss and link budget calculations	2	6
Chapter 6: Arrays	2	6
<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.