



**MUTAH UNIVERSITY**  
**Faculty of Engineering**  
**Department of Electrical Engineering**



**Course Syllabus**

Course Code	Course Name	Credits	Contact Hours
0401353	Fields and Waves	3	3 T

**INSTRUCTOR/COORDINATOR**

<b>Name</b>	Dr. Rula Alrawashdeh
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<b>Office Hours</b>	11:00 am-12:30 pm (Mon, Wed)

**TEXTBOOK**

<b>Title</b>	Field and wave electromagnetic
<b>Author/Year/Edition</b>	David. K. Cheng /1989/ 2nd Ed
<b>Other Supplemental Materials</b>	
<b>Title</b>	Elements of Electromagnetics
<b>Author/Year/Edition</b>	Matthew Sadiku/ 2018/7th Edition

**SPECIFIC COURSE INFORMATION**

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

Following subjects are discussed in this course:

Maxwell's equations and time-varying fields, plane electromagnetic waves, power radiation, power flow and transmission, normal and oblique incidence and theory and applications of transmission lines, Smith chart and matching circuits.

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

Electromagnetics (0401252) (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 plane wave components and propagation of waves in different (lossless and lossy) media [1].

**CLO2: Understand** the basic principle of operation of transmission lines [1].

**CLO3: Study** the structure and applications of different types of transmission lines [1].

**CLO4: Study** the Smith chart and **understand** how to use it for lossless lines calculations [1]

**CLO5: Understand** the principle of impedance matching and **study** different matching techniques [1].

### 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
<b>Chapter 1:</b> Maxwell's equations and time varying fields.	2	6
<b>Chapter 2:</b> Plane Electromagnetic waves	3	9
<b>Chapter 3:</b> Theory and applications of transmission line	3	9
<b>Chapter 4:</b> Smith Chart	3	9
<b>Chapter 5:</b> Matching circuits	3	9
<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)**

<b>Relationship to program outcomes</b>	
<b>ABET 1-7</b>	<b>Engineering Student Outcomes</b>
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.