MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering

Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401530	Distributed Network Synthesis	3	3 T

INSTRUCTOR/COORDINATOR	
Name	Dr. Rula S. Alrawashdeh
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Office Hours	13:00-14:00 (Sun, Tues, Thur)

TEXTBOOK	
Title	Microwave and RF Design: Transmission Lines
Author/Year/Edition	Michael Steer/2019/3rd Ed
Other Supplemental Materials	
Title	Microwave Filters for Communication Systems: Fundamentals, Design, and Applications
Author/Year/Edition	Richard J. Cameron, Chandra M. Kudsia, Raafat R. Mansour /2018/ 2nd Ed

SPECIFIC COURSE INFORMATION

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

Lumped and distributed circuits. Transmission line sections as distributed elements. Richards transform and Richards theorem. Kuroda equivalent circuits. Design of microwave filters, couples, dividers and phase sniffers in microwave and millimeter wave using distributed networks fundamentals.

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

Network Synthesis and Filters (0401215)

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: Distinguish between lumped and distributed circuits [1]
CLO2: Apply Richard's transformation and theorem to convert Lumped element circuits to distributed element circuits [1].
CLO3: Apply Kuroda transformations to convert different sections of transmission lines [1].
CLO4: Analyze the **design** microwave power dividers, directional couplers and filters [7].

B. Student Learning Outcomes (SLOs) 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: Introduction to lumped and distributed circuit theory	1	3
Chapter 2: Transmission line circuits and sections	4	12
Chapter 2: Richards transform and Richards theorem.	2	6
Chapter 3: Kuroda equivalent circuits	2	6
Chapter 4: Microwave devices and filters design	5	15
Total	*14*	*42*

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.