MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering

Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401442	Measurements & Instrumentation	3	3 T

INSTRUCTOR/COORDINATOR	
Name	Dr. Ziyad Al Tarawneh
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Office Hours	11:00-12:00 (Sun, Tues, Thur)

TEXTBOOK	
Title	Electronic Instruments and Measurements
Author/Year/Edition	Larry D. Jones, A. Foster Chin, Prentice-Hall Int /1991/ 1st Ed
Other Supplemental Materials	
Title	Electronic Instrumentation
Author/Year/Edition	H.S. Kalsi , Tata McGraw Hill / 2018/Third Edition

SPECIFIC COURSE INFORMATION
A. Brief Description of the Content of the Course (Catalog Description)
This course provides the principles for accuracy of electrical measurements and error analysis. The course will cover various subjects namely, Absolute and secondary instruments and indicating instrument such as moving coil and moving iron instruments, dynamometer. DC/AC meters, bridges (DC/AC), electronic measuring instruments, transducer which includes: position, direction, distance, motion, light and associated radiation, temperature, sound, infrasound and ultrasound and environmental sensors and actuators, and finally oscilloscope, function generator and data recorders. Introduction to data acquisition system.
B. Pre-requisites (P) or Co-requisites (C)
Electric Circuits (2) (0401212) **(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: Analyze various types of errors in measurements [1]

CLO2: Understand and apply various measuring techniques used to measure electrical quantities [1].

CLO3: Analyze electrical meters including AC/DC bridges and have the ability to extend their measurement ranges [1].

CLO4: Analyze DC and AC electronic measuring instruments [1].

CLO5: Analyze simple/ complex electrical measurement systems using fundamental skills learned in the class and combine with knowledge from other courses [3].

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
Introduction to accuracy and error analysis of electrical measurements	1	3
Direct-Current Meters	2	6
Alternating-Current Meters	2	6
Direct-Current Bridges	1	3
Alternating – Current Bridges	1	3
Electronic and digital Measuring Instruments	2	6
Oscilloscope, function generator and data recorders	2	6
Transducers and Sensors	1.5	5
Introduction to data acquisition systems	1.5	4
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.