MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering

Course Syllabus
Study Plan 2021: Power and Control Track

Course Code	Course Name	Credits	Contact Hours
0401491	Power Electronics LAB	1	2 T

INSTRUCTOR/COORDINATOR	
Name	Eng. Anwar Tarawneh
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Office Hours	12:00-13:00 (Sun, Tue, Thu)
Classroom Time	9-11 (Tue)

TEXTBOOK	
Title	Laboratory Manual for Industrial Power Electronics
Author/Year/Edition	
Other Supplemental Materials	
Title	***Power Electronics: Converters, Applications, and Design***
Author/Year/Edition	N. Mohan, T. M. Undeland, and W. P. Robbins, 3rd ed. Hoboken, NJ: John Wiley & Sons, 2003/2007

SPECIFIC COURSE INFORMATION
A. Brief Description of the Content of the Course (Catalog Description)
Characteristics of power electronics devices; single phase and three phase uncontrolled and controlled rectifiers; DC-DC converters; inverters and frequency control; DC drive system (single and 4 quadrants); induction motor drive using V/f control; synchronous motor drive.
B. Pre-requisites (P) or Co-requisites (C)
Electric Machines Lab (0401479) **(P)** Power Electronics (0401464) **(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:** Learn how to build different circuits and link the work of control circuits and power [6]. **CLO2**: Connecting the laboratory with the theoretical material and proving the results of mathematical equations [6]. **CLO3**:Workeffectively in groups (teamwork) by sharing discuss and analyze the results [5].

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**
Experiment 1: Introduction about our lab	1	2
Experiment2: DC test : SCR	2	4
Experiment3: Characteristics of SCR,Diod & Triac	2	4
Experiment4: Simple uncontrol rectification	1	2
Experiment5: Simple rectification by SCR	1	2
Experiment6: Full wave rectification by group of diod	1	2
Experiment7: Full wave rectification by group of SCR	1	2
Experiment8: Half control of rectifier	1	2
Experiment9: DC - DC converter (Chopper)	1	2
Experiment10: DC - AC converter (Inverter)	1	2
Experiment11: Control of DC motor by SCR	1	2
Experiment12: AC electronics contactor	1	2
Total	*14*	*28*

EVALUATION		
Assessment Tool	**Due Date**	**Weight (%)**
Mid Exam	According to the university calendar	20
Lab Reports	One week after being taken	40
Final Exam	According to the university calendar	40

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.