The University of Jordan
School of Engineering
Department of Mechatronics Engineering
2nd Semester – A.Y. 2024/2025

Course: **Power Electronics and Drive lab** – 0908423 (1 Cr. – Required Course)
Lecture Time: Sun (12:30-15:30) and Mon (13:00-16:00)

Instructor: Eng. Samer Z. Sartawi.
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Office Hours: Sun, Tue & Thu: 11:30 AM – 12:30 PM.

Course Website: **https://elearning.ju.edu.jo/**

Catalog Data: Introduction to the power electronic components (SCR, Diode, IGBT). Speed and torque control of a DC motor with a load. Inverter control of an induction motor. Modeling and simulation of electrical drives systems and electrical machines using Simulink with external mechanical loads.

Prerequisites by Course: Power Electronics and Drive – 0908321.

Prerequisites By Topic: Students should have assumed to have sufficient knowledge in: Diodes, transistors, SCR, choppers, and Inverters.

Textbook: Experiment Sheets.
References: Power Electronics, Daniel W. Hart, McGraw Hill, International Edition, 2011.

Schedule & Duration: 16 Weeks, 8 Labs (3 hours each) plus exams.

Minimum Student Material: Textbook, class handouts, and Matlab Software.

Minimum College Facilities: Classroom with whiteboard and projection display facilities, lab equipment.

Course Objectives:

- Provide the student with the basic skills and proficiency of implementing the wiring diagrams required to conduct the testing procedures of transformers, AC and DC converters.
- Provide the student with the basic skills of conducting different testing procedures of the different types of power converters.
- Allow the student to benefit from the testing results of the testing procedures to calculate the parameters of the tested power electronics circuit.
- Provide the student with the proficiency of constructing the experimental performance characteristics of the different types of converters and correlate practical and theoretical results..

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1. Proficiently deal with the measuring instruments usually involved in power electronic circuits such as voltmeters, ammeters, ohmmeters, watt meters, power factor meters.
2. Understand and construct the wiring diagram of the different testing procedures of power

electronic circuits.

3. Improve report writing skills.
4. Construct and understand the different performance characteristics of power electronic circuits.
5. Correlate practical and theoretical results of the power electronic circuits.

ABET SO:

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.

Ground Rules:

- **Make up Examinations**

There will be no make up exams for any exam that will be taken during the course. exceptions to this rule is restricted only to the following cases:-

1. death of only first order relatives (father, mother, sister, or brother).
2. hospital entry (in-patient) during the time of the examination.

Any other cases will be given zero mark in the corresponding exam.

- **Special Notes**

Seating plan will be as given in the attendance sheet.

- **Attendance is required** and strictly enforced. To that end, attendance will be taken every lecture; Absence of more than *7 hours* will result in the expulsion of the student from the course.

Assessments:

Exams, Reports and Project.

Grading policy:

Report		20 %
Project		10 **%**
Midterm Exam		30 **%**
Final Exam		40 **%**
	Total	**100%**

Last Updated:

Feb 2025