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

Course: **Mechatronics Systems Design Lab – 0908577 (1 Cr. – RequiredCourse)**

Instructor: Eng. Qutada Al-Hilo
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Course website: http://elearning.ju.edu.jo

Catalog description: The Lab continues the concepts learned in the Mechatronics Systems course about selection and sizing of various elements in mechatronics systems. The course is designed to teach students through practical sessions and case studies how to design basic systems and select components of a mechatronics system. the lab methodology aims to make students involve more in the design process and to develope the skills of collecting information and selecting components to satisfy some design requirements, involves reading data sheets and extracting information from them.

Prerequisites by course: **MXE 0938562** Mechatronics Systems (pre- or co-requisite)

Prerequisites by topic: The student should have the basic knowledge of measurement systems, control systems, electronics, programming and mechanics.

Textbook: **Lab. Manual**

References:

1. Notes and Manulas on the JU e-learning website.
2. Mechatronics: An integrated approach, Clarence W. de Silva, CRC Press, 2005.
3. Introduction to Mechatronics and Measurement Systems", Third Edition, DavidG. Alciatore and Michael B. Histand, McGraw Hill International Edition, 2007
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Schedule: 11-12 Weeks, 10 lab sessions (3 hours each) plus exams.

Course goals: Gathering technical information about different types of components used in Mechatronics Systems including transducers, controllers and actuators is the main objective of the lab.

Course learning outcomes (CLO) and relation to ABET student outcomes (SO):

	Upon successful completion of this course, a student should:	[SO]
1.	Ability to design basic systems and components of a Mechatronics System.	[6]
2.	Self Directed Learnng: researching a topic on intersect.	[7]
3.	Developing a new skill of gathering technical information about different types of components used in Mechatronic Systems.	[7]
4.	Ability to use and benefit from learning media and available resources to collect information and selecting components to satisfy some design requirements involves reading datasheets and extracting information from them.	
5.	Learning-by-Doing from the tasks performed in the Lab and project.	[7]
6.	Gain the skills necessary to function effectively as a member of a team.	[5, 7]
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Course topics:

		Hrs
1.	Principles of Switching and Driving: Practising Datasheets and Practical sessions.	6
2.	Control of stepper motors.	6
3.	Design of Temprature Control System: Design and Implementation.	6
4.	Pump Sizing of a Hydrauilic System: Design Case Study.	3
5.	Design of Simple Shaft Encoder.	3
6.	Actuator sizing and selection, Motion Control and Variable Speed Drive of a Conveyor System.	3
7.	Visit To Industry	9
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Ground rules:

Attendance:
Students are expected to attend EVERY LAB SESSION and they are responsible for all material, announcements, schedule changes, etc., discussed in class. The university policy regarding the attendance will be strictly adhered to.

Assessment & grading policy:

Assignments	0%	Quizzes	15%
First Exam	0%	Projects	15%
Midterm	30%	Lab Work	0%
Final Exam	40%	Presentation	0%
		Total	**100%**

Last Revised: October 10, 2024

Catalog description in Arabic: