



Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	06

1.	Course Title	Transducers and sensors lab
2.	Course Number	0908473
3.	Credit Hours (Theory, Practical)	(0-Theory, 1-Practical)
	Contact Hours (Theory, Practical)	(0-Theory,3- Practical)
4.	Prerequisites/ Corequisites	0908472 or co-requisite
5.	Program Title	B.Sc. Mechatronics Engineering
6.	Program Code	08
7.	School/ Center	Engineering
8.	Department	Mechatronics
9.	Course Level	4 th Year
10.	Year of Study and Semester (s)	4 th Year (1 st , 2 nd , or 3 rd)
11.	Other Department(s) Involved in Teaching the Course	N/A
12.	Main Learning Language	English
13.	Learning Types	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14.	Online Platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams
15.	Issuing Date	3/13/2024
16.	Revision Date	---

17. Course Coordinator:

Name: Eng. Hisham Mohammad	Contact hours: Sun, Thu (9:30 - 10:30) Mon, Wed (10:30 - 11:30)
Office number: -116	Phone number:23034
Email: h_mohamamd@ju.edu.jo , hishamhatem89@gmail.com .	



18. Other Instructors:

N/A

19. Course Description:

hands-on experience on the following measurement systems: displacement, strain, force, torque, pressure, flow, acceleration, vibration, temperature, and humidity measurement. hands-on experience on various measurement devices such as signals display equipment and function generators. the selection of signal conditioning elements.

20. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

1. Take up leading local and global positions in system building companies, manufacturers and contracting firms that have a major impact on the economic performance of the country and the region and contribute positively to the welfare of society.
2. Fulfil leadership roles in civic society, local government, and professional engineering associations to contribute to the mechatronics engineering profession and how its members practice it in society; become a public figure in providing guidance and advice to the younger engineers.
3. Have a track record in making presentations to large audiences in a convincing manner as well as engaging in industrial negotiations; have a track record in conceiving and implementing suitable organization structures for modern institutions to make them more effective and efficient.
4. Become cutting edge researchers in academia participating and leading research and development teams to produce original research that contributes to solving the problems in society and bridging the gap between academia and industry.

21. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1. Conduct experiments and analyze and interpret the results.
2. Learn sensors and transducer types and understand their characteristics.
3. Build suitable signal conditioning circuit for various transducers.
4. Write complete technical reports.



Course ILOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1	✓	✓	✓	✓	✓	
2		✓	✓		✓	
3			✓	✓	✓	✓
4	✓	✓	✓	✓		

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Program ILOs / Course ILOs	ILO (1)	ILO (2)	ILO (3)	ILO (4)
1				✓
2				✓
3				✓
4			✓	



23. Topic Outline and Schedule:

Week	Lecture	Topic	ILO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Learning Resources
1	1	Introduction to Lab	2	Face to Face	Class + Lab	Synchronous	Lab Sheets
2	2	Operational Amplifier Applications	1, 3, 4				
3	3	Operational Amplifier Applications	1, 3, 4				
4	4	Errors and Measurement Accuracy	1, 4				
5	5	Filtering	1, 3, 4				
6	6	Signal analysis and processing using LabVIEW.	1				
7	7	Illuminance measurement using (LDR)	1, 2, 3, 4				
8	8	Midterm	2, 3				
9	9	Linear Variable Differential Transformer (LVDT)	1, 2, 3, 4				
10	10	Strain Gauge (Load Cell)	1, 2, 3, 4				
11	11	Thermocouple	1, 2, 3, 4				
12	12	Resistance Temperature Detector (RTD)	1, 2, 3, 4				
13	13	Project Discussion	2, 3, 4				
14	14	Project Discussion	2, 3, 4				
15	15	Final Exam	1, 2, 3, 4				



24. Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	ILO/s Linked to the Evaluation activity	Period (Week)	Platform
Project	10	All Topics	2,4	13-14	Class
Reports + Lab Work	20	2-7, 9-12	1,3,4	During semester	Lab
Midterm	30	1-7	2,3	8	Class
Final exam	40	All Topics	1,2,3,4	15	Class

25. Course Requirements:

The student should have the basic knowledge of sensors types and characteristics and how to design signal conditioning circuits

26. Course Policies:

A- Attendance policies:

Students are expected to attend EVERY CLASS SESSION and they are responsible for all materials, announcements, schedule changes, etc., discussed in class.

B- Absences from exams and submitting assignments on time:

There will be no make-up exams for any exam or missed assignment, which will be taken during the course. Exceptions to this rule is restricted only to the following cases:

- Death of only first order relatives (father, mother, sister, or brother).
- Hospital entry (inpatient) during the time of the examination. Any other cases will be given a zero mark in the corresponding exam or assignment.

C- Health and safety procedures:

Students are responsible for:

- Keeping themselves informed of conditions affecting their health and safety.
- Participating in safety training programs.
- Following health and safety practices in their workplace, classroom.
- Advising or reporting unsafe practices or serious hazards in the classroom or laboratory.

**D- Honesty policy regarding cheating, plagiarism, misbehavior:**

Follow the UJ guidelines that provide definitions, procedures, and recommendations for promotion and violation of academic honesty and integrity.

E- Grading policy:

Follow the UJ guidelines that provide definitions of undergraduate grading policy.

F- Available university services that support achievement in the course:

Lab-sheet, class handouts, Laboratory and an access to Personal Computer with office software

27. References:

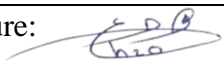
A- Required book(s), assigned reading and audio-visuals:

Mechanical Measurements”, Thomas Beckwith, Roy Marangoni, John Lienhard, Pearson Education, Pearson International Edition, Sixth Edition.

B- Recommended books, materials, and media:

28. Additional information:

N/A

Name of the Instructor or the Course Coordinator: Eng. Hisham Mohammad	Signature: 	Date: 3 / 13 / 2024
Name of the Head of Quality Assurance Committee/ Department	Signature:	Date:
Name of the Head of Department	Signature:	Date:
Name of the Head of Quality Assurance Committee/ School or Center	Signature:	Date:
Name of the Dean or the Director	Signature:	Date: