

**The University of Jordan  
School of Engineering**



Department	Course Name	Course Number	Semester	
Mechanical Engineering	Instrumentation Lab.	0994502	Spring	
<b>2025 Course Catalog Description</b>				
System response and performance, Strain, pressure, force and temperature measurements, Operational amplifiers (Inverting & Non inverting; Low, High & Band pass filters; adder, Integrator Differentiator & Voltage Follower), magnetic field sensor, Data acquisition, Calibration.				
<b>Instructors</b>				
Name	E-mail	Section	Office Hours	Lecture Time
<b>Text Books</b>				
	Text book 1	Text book 2		
Title	Lab Handout			
Author(s)				
Publisher, Year, Edition				
<b>References</b>				
Books	Experimental Methods for Engineers, J. P. Holman, 8 <sup>th</sup> Edition			
Journals				
Internet links				
<b>Prerequisites</b>				
Prerequisites by topic				
Prerequisites by course	Instrumentation 0994501			
Co-requisites by course				
Prerequisite for				
<b>Topics Covered</b>				
Week	Topics	Chapter in Text		
1	Introduction			
2	Calibration			
3	AC circuits tools			
4	System response Characteristics ( FOS & SOS )			
5	Wheatstone bridge			
6	Operational Amplifier (Inverting & Non inverting), Low, High & Band pass filters)			
7	Operational Amplifier (Adder, Integrator, Differentiator & Voltage Follower).			
8	magnetic field sensor			
9	Data acquisition systems			
10	Temperature measurement trainer			
11	Introduction to signal processing			



12	Introduction to vibration	
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<b>Mapping of Course Outcomes to ABET Student Outcomes</b>							
<b>SOs</b>	<b>Course Outcomes</b>						
5,6	Familiarize student with electronic components and instruments devices. Familiarize the student with static and dynamic response of common instrument. Be able to perform instrument calibration and signal conditioning. Evaluate and design performance of different measurement systems Get familiar with operational amplifier and its different types and applications in addition to different electrical components such as power supply Introduce digital data acquisition and computer interface using LabVIEW software and state-of-the art data interfaces will be used Enhance the students written, oral, and graphical communication skills						
<b>Evaluation</b>							
<b>Assessment Tools</b>				<b>Expected Due Date</b>		<b>Weight</b>	
<b>First Exam</b>						25	
<b>Second Exam</b>						25	
<b>Final Exam</b>						50	
<b>Contribution of Course to Meet the Professional Components</b>							
This course is one of the first opportunities for engineering students to encounter the fundamental principles of design problem solving. It is an important prerequisite course for number of designs related-courses, which occur later in the programs of engineering students.							
<b>Relationship to Student Outcomes</b>							
<b>SOs</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Availability</b>					X	X	
<b>Relationship to Aeronautical Engineering Program Objectives (AEPOs)</b>							
<b>AEPO1</b>		<b>AEPO2</b>		<b>AEPO3</b>		<b>AEPO4</b>	
<b>ABET Student Outcomes (SOs)</b>							
<b>1</b>	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics						
<b>2</b>	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						
<b>3</b>	An ability to communicate effectively with a range of audiences						
<b>4</b>	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						
<b>5</b>	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						
<b>6</b>	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions						
<b>7</b>	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies						
<b>Updated by ABET Committee, 2025</b>							

