



Jordan University of Science and Technology
Faculty of Engineering
Aeronautical Engineering Department

AE372 Instrumentation Lab - JNQF Level: 7

First Semester 2023-2024

Course Catalog

1 Credit Hours. System response and performance, Calibration, AC circuits tools, Wheatstone bridge, Operational Amplifier (Inverting, Noninverting, Adder, Integrator, Differentiator, and Voltage Follower), Low, High, and Bandpass filters, magnetic field sensor, Data acquisition systems, Strain, and Temperature measurements, Introduction to signal processing, Introduction to vibration.

Text Book

Title	lab Handout
Author(s)	AE
Edition	1st Edition
Short Name	Textbook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#1	Experimental Methods for Engineers	J. P. Holman	8th Edition	

Instructor

Name	Prof. Khaled Bataineh
Office Location	CH1 L2
Office Hours	
Email	k.bataineh@just.edu.jo

Instructor

Name	Prof. Tariq Darabseh
Office Location	N1 L2

Office Hours	Sun : 11:00 - 13:00 Mon : 10:00 - 12:00 Tue : 11:00 - 12:00 Wed : 11:00 - 12:00
Email	darabseh@just.edu.jo

Class Schedule & Room	
Section 1:	Lecture Time: Mon : 14:30 - 17:30 Room: LAB
Section 2:	Lecture Time: Sun : 08:30 - 11:30 Room: LAB

Prerequisites		
Line Number	Course Name	Prerequisite Type
713700	AE370 Instrumentation	Pre./Con.

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction	From Textbook
Week 2	Calibration	From Textbook
Week 3	AC circuits tools	From Textbook
Week 4	System response Characteristics (FOS & SOS)	From Textbook
Week 5	Wheatstone bridge	From Textbook
Week 6	Operational Amplifier ((Inverting & Non inverting), Low, High & Band pass filters)	From Textbook
Week 7	Operational Amplifier (adder, Integrator, Differentiator & Voltage Follower).	From Textbook
Week 8	MidTerm	From Textbook
Week 9	magnetic field sensor	From Textbook
Week 10	Data acquisition systems	From Textbook
Week 11	Temperature measurement trainer	From Textbook
Week 12	introduction to signal processing	From Textbook
Week 13	introduction to vibration	
Weeks 14, 15	Final Exam/Review	From Textbook

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Recognize the principles governing system response and performance in experimental contexts. [1SO6] [1L7S3]	10%	
Implement calibration techniques to experimental instruments to achieve precise and reliable measurements. [1SO6] [1L7S3]	10%	
Describe the fundamental concepts of AC circuit tools and their applications in experimental setups. [1SO1] [1L7K1]	10%	
Implement various operational amplifier configurations, including inverting, noninverting, adder, integrator, differentiator, and voltage follower, in practical experiments. [1SO6] [1L7S3]	10%	
Utilize low-pass, high-pass, and bandpass filters to manipulate signals in experimental contexts. [1SO6] [1L7S3]	10%	
Analyze experimental results from Wheatstone bridge setups, magnetic field sensors, and measurements of strain and temperature. [1SO6] [1L7S3]	10%	
Evaluate the effectiveness of data acquisition systems, the impact of signal processing techniques on the quality and reliability of experimental measurements, and the suitability of different vibration measurement methods in engineering applications. [1SO4] [1L7C2]	10%	
Demonstrate and present results of group laboratory projects orally and in written format. [1SO3] [1L7C3]	30%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
10		30	10		50	

Relationship to NQF Outcomes (Out of 100%)			
L7K1	L7S3	L7C2	L7C3
10	50	10	30

Evaluation	
Assessment Tool	Weight
Final Exam	40%
Midterm exam	20%
Reports	40%

Policy

Report writing policy	Conceptual discussion is allowed. However, all substantive work must be your own. Lab Report is due one after the experiment. No late reports are allowed.
Attendance	The student is required to attend all the registered courses. The instructor shall register student attendance or absence electronically. JUST policy requires the faculty member to assign ZERO grade (35) if a student misses 20% of the classes. If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed
Exam/Homework	Makeup exam should not be given unless there is a valid excuse according to JUST policies. Arrangements to take an exam at a time other than the one scheduled MUST be made prior to the scheduled exam time. Cheating or copying from neighbor on exam, quiz, or homework is an illegal and unethical activity. Standard JUST policy will be applied. All assignments must be your own work (your own words) Students are responsible for all information provided in lecture. Information presented in class supersedes any information posted elsewhere

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