The University of Jordan
School of Engineering

Department	Course Name	Course Number	Semester
Mechanical Engineering	Advanced Engineering Measurements		

2005 Course Catalog Description

Review of Ordinary Differential Equations, Bessel functions and Legendre polynomials, Partial Differential Equations, Fourier series, integrals and transforms, Laplace transformation, Vector calculus, Complex algebra.

Instructors

Name	E-mail	Sec	Office Hours	Lecture Time

Text Books

	Text book 1	Text book 2
Title	Measurement Systems: Application and Design	
Author(s)	Doebelin, E. O.	
Publisher, Year, Edition	McGraw Hill, 5th Edition	

References

Books	1. Holman, J. P., Experimental Methods for Engineers. 7th Ed. McGraw-Hill. 2. Beckwith, Buck, and Marangoni, Mechanical Measurements. 3rd Ed. Addison Wesley. 3. Figliola and Beasley, Theory and Design for Mechanical Measurements. 2nd Ed. Wiley. 4. Bruun, H. H., Hot-Wire Anemometry: Principles and Signal Analysis. Oxford University Press, U.K. 2. 5. Durst, F., Melling, A., and Whitelaw, J. H., Principles and Practice of Laser-Doppler Anemometry. Academic Press, London. 3. 6. Cheremisinoff, N. P. and Cheremisinoff P. N., Flow Measurement for Engineers and Scientists., Marcel Dekker, New York. 4. 7. Jain, Er. R. K., Mechanical and Industrial Measurements. 8th Ed. Khanna Publishers, Delhi. 8. Dally, J. W., Riley, W. F., and McConnell, K. G., Instrumentation for Engineering Measurements. Wiley.
Journals	
Internet links	

Prerequisites

Prerequisites by topic	
Prerequisites by course	
Co-requisites by course	
Prerequisite for	

Topics Covered

Week	Topics	Chapter in Text	Sections
	1. Introduction to Experimentation and Measurement Systems.		
	2. General Concepts in Instrumentation and Measurements.		
	3. Static and Dynamic Characteristics of Mechanical Systems.		
	4. System Response and Signal Analysis.		
	5. Modelling of Heat and Fluid Flow Systems.		
	6. Flow Pattern Visualization.		
	7. Fundamentals of Hot-Wire Anemometry.		
	8. Laser-Doppler Anemometry.		
	9. Measurement of Force, Torque, Motion, Vibration and Noise.		

	10. Miscellaneous Measurements: Time, Frequency, Fiber-Optic Sensors.		
	11. Strain and Stress analysis, Strain gages and Load Cells, Photoelasticity.		

Course Outcomes

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Assignments

It is essential to your progress and to your mastery of the subject matter that the text assignments to be read and all the assigned problems to be worked. Portions of the reading assignments are closely related to the lectures, and either gives an advance view or a review of the subject matter of the lectures. Other portions, equally important, provide related material, examples and expanded accounts of topics for which there is insufficient time in the lectures. You are responsible for the subject matter of the reading assignments and problems, in addition to the subject matter of the lectures. The term paper project includes in addition to a report, a presentation related to the course.

Evaluation

Assessment Tools	Expected Due Date	Weight
Research Paper		30%
Midterm Exam		30%
Final Exam		40%

Contribution of Course to Meet the Professional Components

Relationship to Mechanical Engineering Program Objectives (MEPOs)			
MEPO1	MEPO2	MEPO3	MEPO4
Updated by ABET Committee, 2024			