THE HASHEMITE UNIVERSITY
FACULTY OF ENGINEERING
COURSE SYLLABUS
DEPARTMENT OF MECHANICAL ENGINEERING

COURSE TITLE:	Engineering Measurements 3 (3,0, 0)	**COURSE NUMBER:**	110402302
DESIGNATION:	Compulsory	**PREREQUISITE(S):**	110403242, 110102102
INSTRUCTOR:	Manal Mustafa	**INSTRUCTOR'S E-MAIL:**	m_mustafa@hu.edu.jo
OFFICE HOURS:	See posted Hours		
LECTURE TIME AND LOCATION	***Section 1:*** Sun., Tues., Thur. 9:00-10:00 , E2017		
	Section 2: Sun., Tues., Thur. 12:00-13:00 , E2023		

Course Description (catalog):

Introduction to measurement systems and experimental methods, basic concepts, calibration, dynamic response, analysis of experimental data, basic electrical measurements and sensing devices, displacement and area measurements, pressure measurement, flow measurement, temperature measurement, force, torque and strain measurements, accelerometer.

Textbook(s) and/or Other Supplementary Materials:

Mechanical Measurements, T. Beckwith, R. Marangoni, J. Lienhard, Pearson. **6th Edition**.

References:

Experimental Methods for Engineers, J. P. Holman, McGraw Hill.

Major Topics Covered:

Topic	# Weeks	# Contact hours*
The Process of Measurement: An Overview	1	3
Standards and Dimensional Units of Measurement	1	3
Assessing and Presenting Experimental Data	1	3
The Response of Measuring Systems	2	6
First Exam		1
Sensors	1	3
Signal Conditioning	1	3
Displacement and Dimensional Measurement	1	3
Strain and Stress: Measurement and Analysis Measurement of Force and Torque	1	3
Second Exam		1
Measurement of Pressure	1	3
Measurement of Fluid Flow	1	3
Temperature Measurements	1	3
Measurement of Motion	1	3
Total	**13**	**41**

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

By the end of this course, students should be able to:

- List General measurement system components and indicate them for any given system.(a)
- Analyze experimental data and judge the accuracy of the measurement procedure.(e)
- Be able to analyze basic electrical circuits needed for signal conditioning in measurement systems.(e,k)
- List various types of sensors and indicate the main differences in their technologies and applications.(a)
- Analyze different types of measuring systems that deal with various physical, static, and dynamic attributes, and indicate the proper application for taking a specific measurement.(a,e,k)

- Be able to choose a proper method for taking a measurement based on its type and the surrounding conditions.(c,k)

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
General Engineering Student Outcomes		
(a)	an ability to apply knowledge of mathematics, science, and engineering	M
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	M
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	H
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	L
H=High, **M**= Medium, **L**=Low		

Grading Plan: Blended Learning Course Option**

		Date	Day	Time
Midterm (Held on Campus)	35 points		TBA	
Quizzes (Held Online)	15 points	Online Quizzes will be posted on Moodle		
HomeWorks	10 points			
Final Exam (Held on Campus)	40 points		TBA	

Course policy:

1. No phone pictures or recordings (vocal or video) are allowed within lecture please respect my and your classmates privacy.
2. Any discussions not related to course topics or content are prohibited.
3. Office hours are meant for course questions and review they are not placed for your personal revelations!!! please respect my time

Absence policy:

1. There will be no disqualification from course based on absence.
2. Missed lectures will have a penalty of 2 marks per lecture deducted from your quizzes mark.
3. Any student with more than 5 missed lectures will lose his/her to use office hours or exam review.

Quizzes policy:

1. Quizzes will be given at random times and dates.
2. Quizzes will be given via Moodle platform.
3. You will be given 2-6 Quizzes so be careful and keep on checking your Moodle!
4. No makeup is given for missed quizzes.
5. No review is allowed for quizzes (Moodle system will automatically grade them)!

Good luck ☺

Prepared by: *Manal Mustafa* **Date:** October 10th 2020