Philadelphia University

Faculty of Engineering and Technology,
Department of Mechatronics Engineering.
Course Syllabus, Second Semester, 2018/2019

Course Details:

Title:	Transducers and Sensors (640242).
Prerequisite:	Electronics(650242).
Credit Hours:	3-credit hours (16 weeks per semester, approximately 45 contact hours).
Textbook:	*"Mechanical Measurements"* By T. Beckwith, R. Marangoni, and J. Lienhard, Sixth edition, Pearson Prentice Hall 2009.
References:	• Modern Control Technology: Components and Systems , Kilian, 2nd Edition, Delmar,2000 • "Process Control Instrumentation Technology" C.D. Johnson, Seventh Edition Prentice Hall 2003. • "Principles of Measurement Systems", John P. Bentley, Pearson Prentice Hall, Fourth Edition 2005. • "Transducers and Instrumentation" D.V.S Murty, Prentice Hall 1995. • "Instrumentation for Engineering Measurement" J.W. Dally, Second Edition John Wiley 2004.
description:	The course provides the student withthe principles of measurement, transducers,and signal conditioning.
Website:	**http://www.philadelphia.edu.jo/academics/malkhawaldeh/**

Instructor: Dr. Mustafa Awwad Al-Khawaldeh
Email: malkhawaldeh@philadelphia.edu.jo
Office: Engineering building, room 6406. ext: 2540
Office hours: *Sunday, Tuesday, and Thursday:11:10-12:00* ,
Monday, Wednesday: *10:00-11:000*

Course Outlines:

Week	Topic	Assignments
1,2	Introduction of measuring system	
3,4,5	Signal conditioning and signal processing	Quiz 1
6	Introduction to transducer technologies	
7,8,9,10	Measurement of displacement, level, distance/range and proximity detection	Quiz 1
11,12	Measurement of force, torque and strain	
13,14	Measurement of temperature	Assignment .1
15	Measurement of flow	
16	Measurement of acceleration and vibration	

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Understand the principles of measurement systems including static and dynamic characteristics, type of errors, and error manipulation	[1]
2.	Understand the concepts and principles of different types of transducers and their associated signal conditioning circuits	[1, 6]
3.	Design signal conditioning circuit	[1 , 2, 5, 6]

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

Sub-Exams: The students will be subjected to two scheduled written exams, first exam and second exam during the semester. Each exam will cover materials given in lectures in the previous 3-4 weeks.

Quizzes: 2-quizzes of 10-minutes will be conducted during the semester.

Homework and projects: Tutorials sheets will be handed out to the students and homework should be solved individually and submitted before or on a set due date.

Grading policy:

First Exam	20%
Second Exam	20%
Quizzes, projects and Homework	20%
Final Exam	40%
Total:	100%

Attendance policy:

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course.