Philadelphia University

Faculty of Engineering and Technology,
Department of Mechatronics Engineering.
Course Syllabus

Course Details:

Title:	Instruments and Transducers (640242).
Prerequisite:	Electronics (1) (640242).
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. - "Sensor Technology Handbook" by Jon S Wilson (2005)
Description:	The course provides the student with the 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 6407. Ext.: 2304 **Office hours**: Sunday, Tuesday: 11:15-12:45

Course Outlines:

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

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]
3.	Design signal conditioning circuit	[2]

Midterm Exams: The students will be subjected to mid-term scheduled written exams. The exam covers materials given in lectures in the previous1-7 weeks.

Quizzes : Two quizzes will be given during the semester.

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

Final Exam: The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Grading policy:

Mid-Term Exam	30%
Assignments and Homework	30%
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.