



Philadelphia University

Faculty of Engineering - Department of Electrical Engineering

Course Details:

- Title:** Instrumentation & Measurements Lab. (610٣٣٦)
- Prerequisite:** Instrumentation & Measurements (610332)
- Credit Hours:** 1 credit hours (16 weeks per semester, approximately 45 contact hours)
- Textbook:** Laboratory notes and manual
- References:** 1- Modern Electronic Instrumentation and measurement techniques. William D.Cooper , Prentice –Hall.
2- Experimental Methods for Engineers. Holman & Gajda D.Bartholomev .John Wiley and Sons.

Course

- Description:** This laboratory is to learn the fundamentals of sensors and transducers for measurements of light, temperature, speed, force and position measurements .

Course Outlines:

Week	Topic
1	Introduction
2	Variable length (resistance)
3, 4	The Wheatstone bridge and its sensitivity.
5, 6	Temperature Measurements (IC, RTD)
7	Light Measurements (LDR, PV)
8	Light Measurements (Photo Diode, Photo Transistor)
9, 10	Strain gauges (Force measurements).
11, 12	The linear variable differential transformer (LVDT).
13, 14	Capacitance and inductance Measurements
15, 16	Rotational Speed Measurements.

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Use different bridges in measurement.	[a, b, d]
2.	Understand and use all types of sensors and transducers .	[a, b, d]
3.	Understand the analysis of errors in measurements devices	[b]

Assessment Guidance:

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

- Quizzes:** (3-5) quizzes of (10-15) minutes will be conducted during the semester. The materials of the quizzes are set by the lecturer.
- Reports:** 10 report.
- 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:

First Exam	"Quizzes (5%), reports (12%) and performances (3%)" 20%
Second Exam	"Quizzes (5%), reports (12%) and performances (3%)" 20%
Third Exam	"Quizzes (5%), reports (12%) and performances (3%)" 20%
Final Exam	"Practical 30% and Theoretical 10%" 40%
<hr/>	
Total:	100%

Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes 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. If the excuse is approved by the deanship the student will be considered withdrawn from the course.

May, 2018