MENG 203 - Experimental methods for engineering

Department:
Mechanical Engineering

Program Name: Mechanical Engineering	**Program Code:** 23	
Course Number: MENG203	**Credits:** 2 Cr	**Year/Semester:** 2018 FALL

☒ Required Course ☐ Elective Course (click on and check the appropriate box)

Prerequisite(s):
MENG245

Catalog Description:
To introduce the students to basic concepts (calibration standards, dimensions and units, the generalized measurement .....), Analysis of experimental data, Basic electrical measurements and sensing devices, Displacement and area measurements, Pressure measurement, Flow measurement, The measurement of temperature, Force, torque and strain measurements, Motion and vibration measurement, Report writing and presentations and Design of experiments.

Course Web Page:
http://me.emu.edu.tr/hacisevki/

Textbook(s):
Holman J. P., Experimental methods for engineerS, 7th ed., The McGraw-Hill Companies, New York, © 2007.

Lab Manual:
Experimental methods for engineering lab booklet.

Indicative Basic Reading List :
Y. A. Çengel and J. M. Cimbala, *Fluid Mechanics: Fundamentals and Applications*, McGraw-Hill, New York, 2006.

Topics Covered and Class Schedule:
(2 hours of lectures per week)

Week 1-2	Introduction and basic concepts (calibration standards, dimentions and units , the generalized measurement)
Week 3	Report writing and presentations
Week 4-5	Analysis of experimental data
Week 6	Displacement and area measurements
Week 7	Pressure measurement
Weeks 8-9	**Mid-Term Examination**
Week 10-11	Flow measurement
Weeks 12	The measurement of temperature
Week 13	Force, torque and strain measurements
Week 14	Motion and vibration measurement
Week 15:	**Final Examination**

Laboratory Schedule:
(3 hours of laboratory per week)

Week 4	Lab 1: Pressure Calibration

Week 5	Lab 2: Flow measurements (flow meter, rotameter, venturi meter)
Week 6	Lab 3: Vernier caliper measurements
Week 10	Lab 4: Thermal conductivity measurement
Week 11	Lab 5: Area measurement (Planimeter)
Week 12	Lab 6: Mass balance measurments

Course Learning Outcomes:

At the end of the course, student must be able to

(1) To improved there ability to used all type of Flow measurement, Pressure measurement, Temperature measurement, Force, Torque and strain measurement;
(2) To improved there ability in writing reports and presented;
(3) Understand the main formulation methods and the limitations of the equations derived from them;
(4) Improved there ability to analysis the experimental data;
(5) Design and conduct an experiment and present there results;
(6) Improved there ability in dealing with equipment;
(7) Demonstrate ability to function in design teams;

	Method	**No**	**Percentage**
Assessment	Midterm Exam	1	25 %
	Quizzes	4	10 %
	Lab Report (s)	7	30 %
	Final Examination	1	35 %

Contribution of Course to Criterion 5
Credit Hours for:

Mathematics & Basic Science : 0
Engineering Sciences and Design : 4
General Education : 0

Relationship of Course to Program Outcomes
The course has been designed to contribute to the following program outcomes:

(a) apply knowledge of mathematics, science, and engineering
(c) 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
(e) identify, formulate, and solve engineering problems
(k) use the techniques, skills, and modern engineering tools necessary for engineering practice

Prepared by: Assoc. Prof. Dr. HASAN HACIŞEVKİ	**Date Prepared: 25 September 2018**

QUIZ Dates

Number of Quiz	Quiz Dates	Class
Quiz 1	10 / 10 / 2018	ME113
Quiz 2	24 / 10 / 2018	ME113
Quiz 3	14 / 11 / 2018	ME113
Quiz 4	12 / 12 / 2018	ME113

Important Note: Students attendance must be min. ***70%*** to be able to evaluated and get benefit from the curve iff applied. Any missing **two experiment** will be resulting ***NG grade***. If you miss any exam or Lab work you must prove the absence with reasonable excuse otherwise make up will not be given to those students.