 OSTİM TEKNİK ÜNİVERSİTESİ A N K A R A	FACULTY OF ENGINEERING AERO 311 COURSE SYLLABUS	Doküman No	MF.FR.003
		Revizyon Tarihi	13.11.2024
		Revizyon No	01
		Sayfa No	1 / 4


AERO 311 – EXPERIMENTAL ENGINEERING					
Course Code	Course Name			Semester	
AERO 311	Experimental Engineering			Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/>	
Hours				Credit	ECTS
Theory	Practice		Lab	3	4
2	2		0		

Course Details	
Department	Aerospace Engineering
Course Language	English
Course Level	Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/>
Mode of Delivery	Face to Face <input checked="" type="checkbox"/> Online <input type="checkbox"/> Hybrid <input type="checkbox"/>
Course Type	Compulsory <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
Course Objectives	This course aims to teach the students the methods involved in analyzing measurement data and the errors associated with the measurement system used. In addition, the students learn ways to measure physical quantities.
Course Content	Introduction, Error measurement; Uncertainty & Probability and Statistics, Force and Strain Measurements, Temperature measurement, pressure measurement, velocity measurement, Flow measurement, Rotational Frequency Measurements, Power measurement, Computerized data acquisition, Introduction to Lab View.
Course Method/ Techniques	Lecture <input checked="" type="checkbox"/> Question & Answer <input type="checkbox"/> Presentation <input type="checkbox"/> Discussion <input type="checkbox"/>
Prerequisites/ Corequisites	
Work Placement(s)	

Textbook/References/Materials
<ul style="list-style-type: none"> Theory and Design for Mechanical Measurements, Figliola and Beasley, Wiley. Mechanical Measurements, S.P. Venkateshan, John Wiley & Sons Ltd.


Course Category				
Mathematics and Basic Sciences	<input type="checkbox"/>		Education	<input type="checkbox"/>
Engineering	<input checked="" type="checkbox"/>		Science	<input type="checkbox"/>
Engineering Design	<input type="checkbox"/>		Health	<input type="checkbox"/>
Social Sciences	<input type="checkbox"/>		Profession	<input type="checkbox"/>

Weekly Schedule

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No	Topics	Materials/Notes
1	Introduction	Introduction to experimental engineering.
2	Errors	Expected Uncertainty & Probability and Statistics.
3	Lab	Lab Safety, Report Writing and Graphing
4	Force and Strain Measurements	Force and strain measurement methods.
5	Temperature Measurements	Temperature measurement methods.
6	Pressure Measurements	Pressure measurement methods.
7	Flow Measurements	Flow measurement methods.
8	Midterm Exam	
9	Rotational Frequency Measurements	Rotational Frequency Measurements methods.
10	Power Measurements	Power measurement methods.
11	Measurement System Behavior	First Order Systems.
12	Computerized Data Acquisition	Computerized data acquisition methods.
13	Thermocouples	Dynamic response of a thermocouple and Analysis of A U-Tube Manometer.
14	Lab View	Introduction to Lab View.
15	Final Exam	

Assessment Methods and Criteria		
In-term studies	Quantity	Percentage
Attendance	14	5%
Lab		
Practice		
Fieldwork		
Course-specific internship		
Quiz/Studio/Criticize	5	15%
Homework	5	10%
Presentation / Seminar	1	10%
Project		
Report		
Seminar		
Midterm Exam	1	20%
Final Exam	1	40%
Total		100%
Contribution of Midterm Studies to Success Grade		60%
Contribution of End of Semester Studies to Success Grade		40%
Total		100%

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ECTS Allocated Based on Student Workload			
Activities	Quantity	Duration (Hrs)	Total Workload
Course Hours	14	2	28
Lab			
Practice			
Fieldwork			
Course-specific Work Placement			
Out-of-class study time	14	3	42
Quiz/Studio/Criticize			
Homework	5	2	10
Presentation / Seminar	1	2	2
Project			
Report			
Midterm Exam and Preparation for Midterm	1	8	8
Final Exam and Preparation for Final Exam	1	10	10
Total Workload			100
Total Workload / 25			4
ECTS Credit			4

Course Learning Outcomes	
No	Outcome
L1	Become familiar with the vocabulary of basic measurement science.
L2	Understand basic measurement and data analysis techniques.
L3	Understand how errors effect measurement results, and how to determine the cause of certain types of errors in order to reduce them, and to account for the error that cannot be eliminated.
L4	Become familiar with various types of measurement systems and to set up and perform experiments according to a given procedure.
L5	Understand the relationship between analytical predictions and experimental results.
L6	Be introduced to, and gain basic competence in, digital data acquisition systems.
L7	Learn the basics of the LabVIEW application for controlling DAQ hardware and analyzing data.

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Contribution of Course Learning Outcomes to Program Competencies/Outcomes															
<i>Contribution Level: 1: Very Slight, 2: Slight, 3: Moderate, 4: Significant, 5: Very Significant</i>															
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11				Total
L1	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
L2	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
L3	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
L4	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
L5	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
L6	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
L7	4	5	5	5	3	5	3	3	2	1	1				37/55; 67.27%
														Total	259/385; 67.27%