

SYLLABUS

Course name: MEC 302 Experimental Engineering		Department: Mechanical Engineering				
Year/Semester	Methods of Education					Credit (ECTS)
	Lecture (h/week)	Mid-term Exam	Lab (h/semester)	Project/Field Study	Final Exam	
2021-2022/ Spring Semester	2	1	2	many	1	4
Language	English					
Compulsory (C) /Elective (E)	C					
Prerequisites	None					
Course Contents	<ul style="list-style-type: none"> Formulation and design of laboratory experiments to address specific problems on fluid mechanics and structural mechanics. Perform well-planned experiments in structural mechanics, fluid mechanics and electrical systems and controls. Deliver the basics in data analysis. 					
Course Objectives	<ul style="list-style-type: none"> Design an experimental setup; decide on the measurement system depending on requirements and run the experiment. Gain knowledge on choosing the proper measurement system by considering their advantages and disadvantages. Carry out analysis of experimental data by presenting results in appropriate plots. 					
Learning Outcomes and Competences	<ul style="list-style-type: none"> Gain experience in laboratory experiments in the frame of structural mechanics, fluid mechanics as well as in electrical systems and controls. Demonstrate the ability to compose a report paper and effectively communicate project duties through an oral presentation. 					
Textbook and /or References	Course Book: <ul style="list-style-type: none"> Figliola, R.S. and Beasley D.E., <i>Theory and Design for Mechanical Measurements</i>, 7th ed., Wiley, 2020 					
Assessment Criteria			If any, mark as (X)	Percentage (%)		
	Midterm Exams		(X)	30		
	Quiz					
	Homework					
	Projects		(X)	20		
	Laboratory work					
Final Exam		(X)	50			
Instructor	Assist. Prof. Dr. Hande YAVUZ					
Week	Subject					
1	Introduction to experimental engineering					
2-3	Experimental testing standards					
4-7	Structural mechanics tests (static strain measurements): Tensile testing Compression testing Flexural testing Hardness test Reporting and discussion of results of structural mechanics tests					
8	MT Exam					
9	Temperature measurements Reporting and discussion of results of experiments.					
10-11	Pressure and velocity measurements Reporting and discussion of results of experiments.					
12-13	Flow measurements Reporting and discussion of results of experiments.					
14-15	Term Projects Project Reporting and Presentation					
16	Final Exam					