Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Mechanical Engineering Department
2024-2025 Spring Semester
SYLLABUS

Code/Name	MEC 404 / Mechanical Engineering Laboratory II
Type	Required
Credit/ECTS	2/2
Hour per Week	3 (1+0+2)
Level/Year	Undergraduate/4
Semester	Spring
Classroom	A203, Mech. Labs
Content	This course continues from MEC 403. Experiments on basic fields of mechanical engineering including solid mechanics, material characteristics, fuel characteristics, design and manufacturing, energy, heating and cooling systems, heat transfer, automotive, machine tools, machine theory, machine dynamics, and control. Analysis of experimental data, plotting, curve fitting, and presentation of results in written reports.
Prerequisites	NA
Textbooks	***Primary*** JP Holman, *Experimental Methods for Engineers*, 8th Ed., McGraw-Hill, 2012. ***Supplementary*** RS Figliola, DE Beasley, *Theory and Design for Mechanical Measurements*. J W & S, 2012.
Objectives	• To operate a broad range of instruments to conduct mechanical experiments • To analyze and to assess experimental data effectively • To prepare laboratory reports with a professional engineering approach
Course Outcomes	In this course you will be able to: CO1 Experiment various processes in the Mechanical Engineering subdivisions CO2 Analyze experiment data with suitable approaches and methods CO3 Justify accuracy of experimental results CO4 Deduce how the theory applies to the physical world CO5 Design professional laboratory reports

Weekly Schedule of Topics

W	Topic
1	Introduction, presentation of syllabus, laboratory rules, safety agreement
2	Hardness test; standards and applications
3	Impact test; Charpy application and standards
4	Experiment: Natural and forced heat convection
5	Experiment: Thermal conductivity
6	Experiment: Multiple heat exchangers
7	Discussion: Heat transfer group experiments
8	Experiment: Bar linkage set
9	Experiment: Ball balancing table
10	Discussion: Control group experiments
11	Experiment: Air conditioning
12	Experiment: Cooling cycle
13	Experiment: Gas turbine experiment
14	Discussion: Thermodynamics group experiments

Professional Contribution	Ability to design experiments, acquire data, evaluate data, compare, and interpret experimental results with analytical and/or computational models

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	4	5	4	4	1	1	4	3	3	3
CO2	4	4	5	4	4	1	0	4	3	2	3
CO3	5	5	5	5	5	1	4	5	4	4	4
CO4	4	4	5	4	4	1	2	4	3	3	3
CO5	4	5	5	5	5	1	3	5	4	3	4

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions	• The consequence of violation of the attendance rule is to receive a grade of NA.
Requirements	NA
Evaluation	Midterm Exam 20% Exp. Reports 30% Presentation 10% Final Exam 40% Total 100%
Rubric	NA
Course Policy	1. You must attend at least 80% of the sessions, including add-drop period. 2. Be in the class on time. 3. English should always be used to communicate with one another. 4. Mobile phones should be switched off and put away during the class.
Cheating & Plagiarism	• Copying or letting someone to copy your work on exams, assignments, or reports is cheating. • Cutting and pasting text, figures and tables from the web sources or any other electronic source is plagiarism.

Instructor

Name/Surname	Alparslan Topcu	Email	alparslan.topcu@alanya.edu.tr
Room	230	Office Hours	Monday : 13:30 – 14:30 Thursday : 13:30 – 14:30

Prepared by Alparslan Topcu on February 04, 2025