

ME 412 – MECHANICAL ENGINEERING LABORATORY

(1 4 3 / ECTS 5)

2015-2016 Spring

Course Syllabus

Instructor: Ender Yıldırım
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 Office Hours: Announced at the lecturer's web page:
<http://academic.cankaya.edu.tr/~endery>
 Please get an appointment (preferably via e-mail) if you plan to visit out of the office hours.

Web site: <http://me412.cankaya.edu.tr>
 Course material posted at:
<http://webonline.cankaya.edu.tr>
 Follow the links for ME412. You must be enrolled to the course to have access to course material (lecture notes, grade tables, discussions etc.)

Course Description: Experimental investigation of thermal and mechanical systems. Phenomena of interest to mechanical engineers. Planning and design of experiments. Analysis of data and presentation of experimental results in a technical report format.

Course Material:

Lecture notes will be posted at webonline.cankaya.edu.tr. However the students are strongly advised to take notes during the lectures.

Students are also advised to refer to the following books:

Figliola and Beasley, "Theory and Design for Mechanical Measurements", John Wiley & Sons

Alciatore, "Introduction to mechatronics and measurement systems", McGraw Hill

Course Policy: The course will be an interactive course utilizing the capabilities of moodle (for more information visit: <https://moodle.org/>). Cankaya University IT Department provides moodle services via <http://webonline.cankaya.edu.tr>. Students will have access to all lecture materials posted on this web site. It will also be possible to follow up-to-date grades and attendance. The students are encouraged to use the forum actively to ask questions to lecturers or open up a new discussion on course subjects at any time during the semester.

Students are advised to check webonline.cankaya.edu.tr regularly for announcements or active discussions.

During the laboratory hours, students are expected to work on their experiments under active supervision of the instructor. Out of the scheduled laboratory hours, student may use the laboratory facilities if available.

Theoretical background related to the experiments will be discussed and an introduction to common sensors and actuators will be presented during one hour lecture session in every week.

Lab Works/Reports: During laboratory hours students will be assigned to conduct two experiments related to following topics; free convection and forced convection heat transfer, losses in pipe flows, experimental stress analysis, mechanical vibration analysis. Details of the experiments will be announced during the semester.

For each experiment, students are expected to

- 1- Design the experiment related to the problem,
- 2- Devise required experimental set-up,
- 3- Conduct the experiment,
- 4- Collect the data,
- 5- Analyze the data,
- 6- Prepare a technical report
- 7- Present their findings in class

The report should include information on steps 1 to 5. Students will have approximately 5 weeks to work on each problem. Students are expected to disassemble their set-ups after submitting their reports.

Submissions will be made via webonline.cankaya.edu.tr in pdf format until specified deadline. A text and a math editor (e.g. MS Word and MathType) should be used in preparation of the reports. Late submissions will be prevented by the web site. Hence, submission after deadline is not possible and obviously cannot be graded.

Attendance: Students must attend at least 70% of the lecture hours and at least 80% of the laboratory hours. Otherwise, the student may get NA (Not attended) from the course. Valid excuses are exempt from computation of these percentages.

Apart from the university regulations, it is of student's benefit to attend all of the lecture and laboratory hours. Generally it is extremely challenging to pass a course unless you attend the lectures.

Grading: Grading will be based on laboratory reports, in-class presentations, laboratory performances (which will be assessed through short answered pop-quizzes), laboratory attendances, and a final exam. Grading policy is summarized below.

Lab reports	(2 reports, 25 % each)	50 %
In-class presentations	(2 presentations, 10 % each)	20 %
Lab performance	(average of pop-quizzes)	10 %
Lab attendance	(percent of total lab hours)	5 %
Final Exam		15 %
Total		100 %

Announcements will be posted at webonline.cankaya.edu.tr