

MKT 4842 - EXPERIMENTAL METHODS FOR ENGINEERS**References:**

- Experimental Methods for Engineers (8th International Edition) Holman, Jack.
- Handbook of Modern Sensors : Physics, Design and Applications, Jacob Fraden, 4th Edition, Springer.
- Theory and Design for Mechanical Measurements – 6th Edition, R.S. Figliola, and D.E. Beasley, Wiley.

Course Objectives: The aim of this course is to provide students with theory and hands-on laboratory experience, including simple and more complex experiments and computerized data acquisition in problem solving, professional judgment, and the importance of accuracy, error, and uncertainty analysis.

Instructor: Prof.Dr. Cüneyt Yılmaz

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Office Hours: Monday 13:00-13:50

Tuesday 09:00-09:50

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Assistant: Res.Assist. Yağmur Işık

Class Hours: Monday 9:00-11:50

Classroom: A403

Course Content:

Basic concepts of measurement methods and planning and documenting experiments. Typical sensors, transducers, and measurements system behavior. Data sampling and computerized data acquisition systems. Statistical methods and uncertainty analysis applied to data reduction. Laboratory experiments with measurement of selected material properties and solid mechanical and fluid/thermal quantities.

Weekly Topics:

1. Introduction
2. Basic Concepts
3. Error and uncertainty analysis
4. Analysis of experimental data
5. Displacement and area measurement
6. Selection of Graphical Method, and Graphical Analysis
7. Experiment Planning
8. Midterm Exam
9. Force and strain measurement
10. Pressure and Velocity measurement
11. Motion and vibration measurement
12. Flow measurement
13. Temperature Measurement
14. General Review of Topics
15. Final Exam

Grading: 0.3×Midterm Exam + 0.3×Assignments + 0.4×Final Exam

Class Attendance: > 70%

Make-up exams: Students should act according to [the directives of YTU](#).

Code of ethics: [Akademik Etik](http://www.aek.yildiz.edu.tr) (<http://www.aek.yildiz.edu.tr>)

* Every student taking this class must join the Google Classroom (**MIDY-2024B**). The code will be provided.

** This syllabus can be updated. Students are responsible for following this page.