

1. *Course number and name*
ENGR 302: Experimental Analysis
2. *Credits and contact hours*
1 unit. One 2-hr, 45-min lab session per week.
3. *Instructor's or course coordinator's name*
Instructors: Mutlu Ozer, Jonathan Tai
Course coordinator: Ed Cheng, Associate Professor
4. *Text book, title, author, and year*
(no textbook required)
 - a. *other supplemental materials*
ENGR 302 Laboratory Manual
5. *Specific course information*
 - a. *brief description of the content of the course (catalog description)*
Experimental investigation and analysis of engineering systems: structural elements, fluid devices, and thermal systems. Use of computers for data acquisition.
 - b. *prerequisites or co-requisites*
ENGR 300, 309; ENGR 304 (may be taken concurrently)
 - c. *indicate whether a required, elective, or selected elective course in the program*
Required for Civil Engineering; required for Mechanical Engineering.
6. *Specific goals for the course*
 - a. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*
 - Students will be able to use a computer data acquisition system to collect and analyze experimental data.
 - Students will become familiar with common measurement devices including strain gages.
 - Students will be able to plan and design an engineering experiment.
 - Students will be able to apply the basic theory of beam flexure (strains, stresses and deflections) to an experimental system.
 - Students will be able to apply the basic theories of fluid statics and dynamics (manometer equations, Bernoulli equation) to applicable experiments.
 - Students will be able to perform uncertainty analysis for an experimental system.
 - Students will be able to write a competent formal report for an engineering experiment.
 - Students will be able to write a competent technical memorandum about an engineering experiment.
 - Students will be able to give a competent oral presentation.
 - b. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): a, b, c, d, e, g, k.

7. *Brief list of topics to be covered*

- Experimental design
- Computerized data acquisition
- Experimental data analysis, including uncertainty analysis
- Report writing
- Other topics from mechanical and civil engineering depending on experiments performed