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)

   f. other supplemental materials
   ENGR 302 Laboratory Manual

5. *Specific course information*
   m. 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.

   n. prerequisites or co-requisites
   ENGR 300, 309; ENGR 304 (may be taken concurrently)

   o. 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*
   i. 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.

j. 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