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