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