1. **Course number and name**
   ENGR 610: Engineering Cost Analysis

2. **Credits and contact hours**
   3 credit hours; three 50-minute lecture sessions/week, or two 1hr-15-minute lecture sessions/week, depending on semester

3. **Instructor’s or course coordinator’s name**
   Instructor: Mutlu Ozer, Adjunct Professor
   Course coordinator: Ghassan Tarakji, Professor of Civil Engineering

4. **Text book, title, author, and year**

   a. **other supplemental materials**
      none

5. **Specific course information**
   a. **brief description of the content of the course (catalog description)**
      Quantifying alternatives for decision making, time-value of money, project investment evaluation, comparison of alternatives, and engineering practice applications.

   b. **prerequisites or co-requisites**
      ENGR 103: Introduction to Computers or CSC 210: Introduction to Computer Programming
      Math 227: Calculus II (Techniques of integration, analytic geometry, polar coordinates, vectors, improper integrals. Sequences and series.)

   c. **indicate whether a required, elective, or selected elective course in the program**
      Elective for Civil, Mechanical, and Electrical 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.**
      - The student will demonstrate an understanding of interest formulas and their application.
      - The student is able to apply the principles of rate of return (ROR), incremental ROR, benefit/cost ratios (B/C), incremental B/C, and replacement analysis in order to compare alternatives for decision making.
      - The student is able to identify and quantify variables, and formulate problems for decision making.
      - The student will demonstrate the ability to determine how deviations from the assumptions used in solving a problem will affect the conclusions obtained.
• The student will demonstrate an understanding of inflation and how to take it into account when doing economic analysis.
• The student will demonstrate an understanding of the common depreciation models used, and the ability to apply these models in practical cases.
• The student will demonstrate the ability to calculate corporate taxes, and to calculate after–tax returns.

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, e, c, h, j

7. Brief list of topics to be covered
• Quantifying costs and benefits
• Interest formulas and their application
• Rate of return computations
• Comparison of alternatives
• Benefit/Cost ratio
• Replacement analysis
• Inflation
• Taxation and after-tax cash-flow
• Break-Even analysis
• Review and case studies