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**  

   b. **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.

   d. **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.)

   e. **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.

c. 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, 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