1. **Course number and name**
   ENGR 439: Construction Engineering

2. **Credits and contact hours**
   3 credit hours; three 50-minute lecture sessions/week, or two 75-minute lecture sessions/week, depending on semester

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

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

   **Recommended Reference**

5. **Specific course information**
   a. **brief description of the content of the course (catalog description)**
      Topics in construction engineering; construction methods and equipment, Excavating, loading, hauling, and finishing; production of construction materials; compressed air and water systems; concrete form design; quality control.

   b. **prerequisites and/or co-requisites**
      ENGR 309: Mechanics of Solids
      ENGR 430: Soil Mechanics (co-requisite)

   c. **indicate whether a required, elective, or selected elective course in the program**
      Elective in Civil 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 the characteristics of the construction industry.
      - The student will show familiarity with current issues pertaining to the construction industry.
      - The student will demonstrate an understanding of soil properties and characteristics.
• The student will demonstrate the ability to calculate production rates of various construction equipment.
• The student will demonstrate an understanding of the design of concrete formwork.
• The student will demonstrate an understanding of QC/QA and the application of acceptance plans in construction projects.
• The student will demonstrate an understanding of commonly used construction materials and equipment, and the ability to design certain construction systems.

• The student will conduct research on one aspect of construction engineering and management of his/her choosing and be ready to present the findings to the class.

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):

N/A

7. Brief list of topics to be covered
• Characteristics of the construction industry
• Earthmoving materials and operations
• Excavating equipment
• Loading and hauling equipment
• Cranes and lifting equipment
• Miscellaneous construction equipment
• Air and water systems
• Asphalt and bituminous concrete
• Concrete mix design
• Concrete form design
• Quality control