

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*
S. W. Nunnally. *Construction Methods and Management*. 8th ed. Prentice Hall, 2010.

Recommended Reference

Caterpillar Performance Handbook. Caterpillar Tractor Company. Peoria, Illinois. (Latest Edition)

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.
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- 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