Course Objectives & Outcomes
College of Science & Engineering

Department: Civil and Environmental Engineering (CE)
Course Number: 5564
Course Name: Design of Concrete Structures

Objective 1) Be able to perform analysis and design of reinforced concrete members and connections.
   Outcomes
   1. Students will understand the general mechanical behavior of reinforced concrete.
   2. Students will be able to analyze and design reinforced concrete flexural members.
   3. Students will be able to analyze and design reinforced concrete compression members.
   4. Students will be able to analyze and design for vertical and horizontal shear in reinforced concrete.
   5. Students will be able to analyze transfer and development length of concrete reinforcement.
   6. Students will be able to analyze and design for deflection and crack control of reinforced concrete members.
   7. Students will be able to analyze and design simple connections of reinforced concrete members.

Assignments that demonstrate accomplishment of this outcome:
   1) Correct answers to 1 of 2 design problems corresponding to each outcome.
   2) Correct answers to midterm and final examinations. Questions include identification of primary concepts through fill in the blank, diagram labeling, multiple choice, and short answer as well as design/analysis problems that require high level mathematical computation.

Objective 2) Be able to identify and interpret the appropriate relevant industry design codes.
   Outcomes
   1. Students will be able to identify and apply the applicable industry design codes relevant to the design of reinforced concrete members.
   2. Students will be familiar with professional and ethical issues and the importance of lifelong learning in structural engineering.

Assignments that demonstrate accomplishment of this outcome:
   1) Correct answers to 1 of 2 design problems corresponding to each outcome with emphasis placed on identification of applicable industry design code.
   2) Correct answers to midterm and final examinations. Questions include design/analysis problems that require the selection of the appropriate industry design code.

Objective 3) To become familiar with professional and contemporary issues in the design and fabrication of reinforced concrete members.
   Outcomes
   1. Students will become familiar with the reinforced concrete fabrication and construction process.
   2. Students will be able to perform an industry relevant design project in a team setting.

Assignments that demonstrate accomplishment of this outcome:
   1) Students will be required to design a concrete mix design and form, pour, construct, and test a reinforced concrete beam.
   2) Students will be required to perform as a group, each with individual assignments, on an industry relevant design project.