

COURSE SYLLABUS (2 Page)

Course Number: CEGR 3225
Course Name: Reinforced Concrete Design I

Credits and Contact Hours: 3

Instructor: Brett Tempest

Required Textbook: *Title:* Reinforced Concrete – Mechanics and Design (318R-14)
Authors: ACI Committee 318
Year: 2014

Recommended Textbook: *Title:* Building Code Requirements for Structural Concrete (318-11) and Commentary (318R-14)
Authors: ACI Committee 318
Year: 2014

Catalog Description: Analysis and design of reinforced concrete components with emphasis on fundamental theories. Mechanics and behavior of reinforced concrete. Flexural members to include singly and doubly-reinforced beams of various cross sections (rectangular, T-beams, joists, one-way slabs, and others). Shear in beams and columns. Short columns to include uniaxial and biaxial bending. Construction of short column interaction diagrams. Introduction to footings. Current ACI Specifications.
Most Recently Offered (Day): Spring 2016, Fall 2015, Spring 2015
Most Recently Offered (Evening): Course has not been offered in 3 years

Pre-Requisites/Co-Requisites: CEGR 3122 and CEGR 3255 with grades of C or above

Course is: Selected Elective (SE); Must Choose Either CEGR 3225 or CEGR 3221

Goals: The course will provide information on the analysis and design of reinforced concrete components with emphasis on fundamental theories, and on the mechanics and behavior of reinforced concrete. The students will have an opportunity to learn about the flexural and shear design and analysis of beams, short columns and foundations, using the latest ACI 318 code.

Student Outcomes Addressed:

In this course, students will develop the following Student Outcomes:

- A. an ability to apply knowledge of mathematics, science, and engineering
- C. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- E. an ability to identify, formulate, and solve engineering problems
- I. a recognition of the need for, and an ability to engage in life-long learning
- J. a knowledge of contemporary issues
- K. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Course Topics:

Concrete members and codes, reinforced concrete material properties, flexural and shear design of beams, t-beams, and one-way slabs, short column and footing design, and finally rebar development and anchorage.