1. *Course number and name*

**ENGR 831: Advanced Reinforced Concrete Structures**

1. *Credits and contact hours*

3 credits; one 165-minute lecture sessions/week; engineering topic

1. *Instructor’s or course coordinator’s name*

Zhaoshuo Jiang

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

Wight, James K. and MacGregor, James G., Reinforced Concrete: Mechanics and Design, Sixth Edition, Prentice Hall, 2011, ISBN: 978-0-13-217652-1 (Recommended, not required).

1. *other supplemental materials*

Supplemental online content (apps, recorded videos, web-based tools, etc.) delivered via course webpage

1. *Specific course information*
2. *brief description of the content of the course (catalog description)*

This course focuses on advanced design of reinforced concrete structural systems. Topics include one-way and two-way slabs, columns, shear walls, footings and connection and design of reinforced concrete moment frames.

1. *prerequisites or co-requisites*

ENGR 425.

1. *indicate whether a required, elective, or selected elective course (as per Table 5-1) in the program*

Elective for Civil Engineering.

1. *Specific goals for the course*
2. *specific outcomes of instruction.*

* Students will demonstrate an ability to:
  + To identify advanced reinforced concrete structural properties and behaviors.
  + To illustrate the basic principles and design methods of reinforced concrete structural members.
  + To apply design procedures for establishing the optimum design of reinforced concrete structures.
  + To develop the ability to analyze and design reinforced concrete building frames.
  + To evaluate code requirements and specifications and understand the background of code

1. *Brief list of topics to be covered*

* Structural Design Process and Principles
* Reinforced Concrete Behaviors and Properties
* Continuous Beams and One-way Slabs
* Two-way Slabs
* Columns: Combined Axial Load and Bending
* Concrete Shear Walls Design
* Concrete Moment Frames Design
* Footing Design
* Deflections and Serviceability