Instructor:

Dr. Asad Esmaeily, 2139 Fiedler Hall, Tel: 532-6063, email: asad@ksu.edu
Class web site: http://online.ksu.edu/CE_743/

Class Meeting:

Tuesday, Thursday, 1:05 PM-2:20 PM, Rathbone 1064

Office Hours:

Tue. 10:00 AM-12:00 AM, and by appointment.

Prerequisites:

CE 544 (or equivalent)

Textbook:


“Building Code Requirements for Structural Concrete (ACI 318-02) and Commentary”, American Concrete Institute, 2002.

Handouts (if any) will be posted on the course web page for download or print.

Objectives and Goals:

This course is both a continuation of the CE 544, “Structural Engineering in Concrete”, and a course to expose the students to the most recent developments in the field of “Reinforced Concrete” from a structural point of view, and governing theoretical and analytical assumptions, methods and tools. By completing this course, the students should:

Have a basic knowledge of the theoretical aspects of the reinforced concrete structures and the relevant analytical methods and tools.

Be able to apply the design principles and appropriate provisions of the current design code (as ACI 318-02) to analyze and design reinforced concrete structural members like beams, columns, connections, slabs, and also retaining walls and footings.

Be able to prepare designs of reinforced concrete structural members with due consideration of economics and constructability.

Grading (Tentative):

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>15%</td>
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<tr>
<td>Project</td>
<td>25%</td>
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<tr>
<td>Midterm</td>
<td>30%</td>
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<tr>
<td>Final</td>
<td>30%</td>
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Grading Scale:
90-100    A
80-90     B
70-80     C
60-70     D
Less than 60  F

Tentative Course Coverage:

Textbook:
Review of Basics of Analysis, Design, Material Properties, LRFD and Safety Margins
Combined Compression and Bending (Short Columns, Slender Columns)
Two-Way Slabs
Yield-Line Analysis of Slabs
Two-Way Slabs: Direct Design Method
Two-Way Slabs: Equivalent Frame Method
Torsion
Deep Beams
Brackets and Corbels
Footings
Strut and Tie Model

Theory:
1. Material Models for steel, concrete and confined concrete (Monotonic and Hysteretic):
2. Moment Curvature
3. Force-Deflection (Plastic Hinge Concept)

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1 Based on Time Limitations.