C&EE 243A
BEHAVIOR AND DESIGN OF RC STRUCTURAL ELEMENTS

Professor:
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Course Information:
Enrollment number: 547-216-200
Lecture 4 hours/week (4 units)
Time/Room: Mon./Wed. 12:00-1:50P BH 4283

Office Hours:
Tue/Thur 3:30 – 5:00 pm Room 5731C Boelter Hall

Grading:
Exams 50% (two exams)
Homework 25% See notes below
Final 25% Code: 05-05 - Tuesday, December 11, 2007, 11:30am-2:30pm

Homework Policy: Weekly homework sets will be assigned and due one week after they are assigned. The homework grade constitutes a significant portion of your grade in this class due to the effort that is required. The homework problems must be done in a neat and orderly fashion on engineering or graph paper using a pencil (no ink). Homework results must be summarized and answers clearly indicated. Discussion, as appropriate, should also be provided. Late homework will be accepted for one class period following the due date, with a 20% penalty.

Exam Policy: The date and format for the Midterm exam will be set at least one week prior to the exam date.

Prerequisites:
C&EE142 or equivalent - Reinforced Concrete Design (undergraduate)

Texts – Required/Recommended:
“Building Code Requirements for Structural Concrete: ACI 318-05,” American Concrete Institute, Farmington Hills, MI. (required)
C&EE 243A: Behavior and Design of RC Structural Elements  
TENTATIVE COURSE OUTLINE  
Professor John Wallace  
Fall 2007

<table>
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<tr>
<th>WEEK</th>
<th>TOPICS</th>
<th>READING/ASSIGNMENT</th>
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| 1    | Flexural Response and Nominal Strength  
Reinforcing Steel  
Concrete  
Moment – curvature analysis  
Deflections | Handouts (Papers & Reports)  
Handouts (Papers & Reports) |
| 2-3  | Confined Concrete  
Background and Models  
Concrete Modeling  
Reinforcement Modeling  
Moment-Curvature Analysis | Handouts (Papers & Reports)  
Computer Programs |
| 4    | Columns  
Column Design  
Column Detailing  
“Non-ductile” Columns | Handouts/ACI 318-05/CRSI  
ACI 318-05/IBC-2006/ASCE-7-05  
Rehabilitation: FEMA 440; ASCE 41 |
| 5    | Beam-Column Joints  
Design approaches  
Use of Headed Reinforcement  
Rehabilitation | MacGregor  
Committee 352; ACI 318-05  
Handouts (Papers & Reports)  
FEMA 356; ASCE-41 |
| 6-7  | Moment Frames  
Definition/Non-participating  
Capacity design and detailing  
Evaluation | Beams/Columns  
ACI 318-05  
Introduction: ASCE-41 Supplement #1 |
| 8-9  | Slender Walls & Coupling Beams:  
Code Design  
Displacement-Based Design  
Stress-based Design  
Shear strength requirements | ACI 318-08  
Handouts  
ACI 318-08  
ACI 318-05 & Handouts |
| 10   | Slab-column frames  
Design  
Stiffness models  
Punching failure | Papers and reports |
| 11   | FINAL EXAM |