CIVL 4136/6136  
*Intermediate Reinforced Concrete Design*

THE UNIVERSITY OF MEMPHIS

*Instructor’s Name:* Dr. Shahram Pezeshk; Office EN108C,  
Phone: (901) 678-4727

*Semester:* Spring 2006

*Hours Credit:* 3 Semester Hours

*Office Hour:* “open door policy”

*Course Meetings:* TBD

*Prerequisites:* CIVL 4135 and CIVL 4122


*Code:* ACI building Code and Commentary, (Instructor will order at a discount price)

*Recommended Textbooks:*  
“Practical Design of Reinforced Concrete” by Russell S. Fling, John Wiley & Sons.  

**COURSE DESCRIPTION**  
Design of two–way slab systems; column design including length effects; integrated building design using current code provisions.
GRADING
The final grades for the course will be based on the following percentages:

Homework/Programs    30%
Exams                40%
Final Exam           30%

100%

All students taking CIVL6136 are required to submit a term paper regarding a topic discussed in class. Students are to discuss their term paper topic with the professor and get an approval.

ATTENDANCE
Regular attendance is necessary to maintain pace with the lectures and the progress of the class. If you must be absent, please make sure you know the assignment for the following class meeting and turn in any work due that day.

MAKE-UP WORK
Generally, if a student misses an exam, a computer program, or a homework assignment a score of zero will be awarded. However, the student may be allowed to make-up an exam or turn in their homework late if a valid reason for the absence is presented to the instructor at the next class meeting. If the student must miss an exam because of a conflict in his/her schedule the student must notify the instructor in writing at least two days prior to the absence. Late homework problems will receive only a maximum of 50% of the grade.

EXAM GRADE CHANGES
After you receive a grade on your exam you will have one week to argue about your grade by writing a dated and signed memo to me explaining the reasons on why you think your grade needs to be changed. After one week I will not consider any arguments about grade changes.
Homework Format

All assignments are to be submitted on engineering paper. You may use any type of engineering paper as long as it has a background grid. The example page below is for the paper available in the bookstore. If an alternate form of paper is used, the headings at the top of the page should be modified to match the printed partitions, however, the remainder of the instructions apply equally to either form.

Work should be done in pencil, and a lead hardness used which produces good contrast to the paper. Figures should be drawn with a straight edge and if appropriate, a circle template or compass. The layout and appearance of your work should be of professional quality. Work no more than one problem per page. Do not use the back of a page for any reason. All pages should be ordered by page number and stapled. A good guide for this standard is to prepare each assignment as if it were to be kept on file and sent to prospective employers as an example of your work at the University of Memphis.

Answers to problems should be accurate to three significant figures. In general, use four significant figures in calculations, and round the final results to three significant figures. Round numbers properly, do not simply truncate. Homework is due at the beginning of class on the due date. Late homework will not be accepted.
# COURSE OUTLINE

<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
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<tbody>
<tr>
<td><strong>January</strong></td>
<td>Introduction and review Members in compression and bending</td>
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<tr>
<td><strong>February</strong></td>
<td>Length effects on columns</td>
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<td>Edge supported slabs</td>
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**Exam**

Edge Supported Slabs

**March**

Two–way column supported slabs

5-11 **Spring Break**

**April**

Exam

Two–way column supported slabs

Deflection and Crack Control in Two–Way–Action Slabs

Yield line theory

26 **Study Day - No Class**

**May**

**1** FINAL EXAM (8:00 a.m. – 10:00 a.m.)
References on Deflections


LECTURE I

Topics Studied in CIVL 4135:
- Flexure analysis and design of beams
- Shear and diagonal tension in beams
- Bond, anchorage, and development length
- Serviceability
- Introduction to column design

CIVL 4136/6136 Topics
- Columns
  - Short columns
  - Slender columns
- Slabs
  - Elastic analysis of plates - flexure
    - Classical solutions
    - Approximate solutions
      - Finite difference
      - Finite elements
    - Transition to “modern design”
      - Nichols
      - Westgarad and Slater
  - ACI design procedure
    - Direct design method
    - Equivalent frame method
  - Informal design procedures
    - Strip method - lower bound
  - Yield line analysis - upper bound
  - Deflection
  - Detailing