CVEN 621 - Advanced Reinforced Concrete Design

Instructor Information
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Course web page: http://cenotes/

Class Hours
Tuesday and Thursday: 11:10 am - 12:25 pm, Room CE 203

Office Hours
Tuesday and Thursday: 2:00 - 3:00 pm
I will be available to help with questions related to the course during my regular office hours. You are also welcome to schedule an appointment or contact me by e-mail when appropriate.

Prerequisites
CVEN 444 (Structural Concrete Design) and graduate classification in Civil Engineering, or approval of the instructor.

Course Objective
The objective of this course is for civil engineering students to expand their knowledge of the behavior and design of reinforced concrete structural components and systems for various types of loading, including loading beyond the elastic range of behavior. It is expected that the students have a general understanding of member behavior, member design, and the concrete building code (ACI 318-02) from their undergraduate reinforced concrete design course(s). The topics planned for this course include the following:

- Design of two-way floor slab systems.
- Design for torsion.
- Design of slender columns.
- Design of columns for biaxial bending.
- Analysis of RC frames under lateral loading.
- Modeling and design of reinforced concrete members subjected to large load reversals.
- Structural walls.
- Deep beams.
- Moment-curvature relationship for beams.
Textbooks
It is strongly recommended that you have the latest ACI 318 Code:
• ACI Committee 318 (2002), Building Code Requirements for Structural Concrete (ACI 318-02) and Commentary (ACI 318R-02), American Concrete Institute, Farmington Hills, Michigan.

Because of the current transition in concrete textbooks being updated to the ACI 318-02 code and because there have been different textbooks used in our undergraduate course in recent semesters, no specific textbook is required for CVEN 621 this semester. However, it is strongly recommended that you have a current reinforced concrete textbook that contains the topics listed on this syllabus. Any of the following texts will provide suitable background material to supplement the notes.
• MacGregor, J.G. (1997), Reinforced Concrete: Mechanics and Design, Third Edition, Prentice Hall, Upper Saddle River, New Jersey. (This reference was used as background to develop much of the course notes, however it is not up-to-date with the current ACI 318-02 Code.)
• Nilson, A.H., D. Darwin and C.W. Dolan (2004). Design of Concrete Structures, Thirteen Edition, McGraw Hill, Boston, Massachusetts. (This book is recommended if you are purchasing a new text. This text will be used for CVEN 444 this semester and should be available in the MSC bookstore under that course.)

Notes
A large portion of the class notes will be posted on the course web page during the semester. The same information will be made available at the WERC Copy Center, upon request.

Assignments
Students will be assigned homework related to the material presented in lecture. A design project will also be assigned and will be due near the end of the semester. There will be one midterm exam and a comprehensive final exam. The midterm exam will take place in the evening to allow students adequate time to demonstrate their understanding of the course topics (see tentative schedule on next sheet).

Grading
Students will be evaluated using the following criteria:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Homework</td>
<td>15%</td>
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<tr>
<td>Design Project</td>
<td>25%</td>
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<tr>
<td>Mid-Term Exam</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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</tbody>
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Late Policy
All homework and project assignments must be turned in at the beginning of class on the day the assignment is due. Assignments turned in after the beginning of class will lose 20% of the total points possible for each day it is late (i.e., an assignment received at 5 pm on the day it is due will lose 20%). No credit will be given for an assignment turned in later than 2 days after the date it is due.
Important Dates

January 20  (Tues.)  First Day of Class
March 15 - 19  (Mon.-Fri.)  Spring Break
March 25  (Thurs.)  Mid-Term Exam, 6:00-7:30 pm (tentative)
April 29  (Thurs.)  Project Presentations (tentative)
May 4  (Tues.)  Last day of class
May 7  (Fri.)  Final Exam, 3:00-5:00 pm

Disability Statement

Texas A&M University has a strong commitment to students with disabilities. Students with documented disabilities such as mobility, hearing or visual impairments, learning and/or psychological disorders should identify themselves to the instructor at the beginning of the semester.

Academic Integrity

• Just as ethical conduct is essential to the engineering profession, academic integrity is critical to ensure a fair and positive learning environment and to make certain that each student receives the grade he or she has earned.

• No form of scholastic dishonesty (cheating, plagiarism, etc.) will be tolerated. As commonly defined, plagiarism consists of passing off as one’s own the ideas, word, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have permission of that person. This includes copying material from books, reports, journals, pamphlets, handouts, other publications, web sites, etc., without giving appropriate credit for those ideas or with out identifying material as quotations when taken directly from another source. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

• Collaboration (cheating) on quizzes and exams will not be tolerated. Cheating will be reported and handled in accordance with the University Regulations, Section 42. Unless otherwise stated, examinations will be closed book; retrieval of data, formulae, examples, definitions, etc. from a crib sheet, calculator, computer or other device during these examinations is a violation of Texas A&M University Student Rule 20.1.1 Acquiring Information.

• Unless otherwise stated, all assignments and homework in this class are expected to be completed based on individual effort. Copying the work of others, including homework, is a violation of Texas A&M University Student Rule 20.1.1 Acquiring Information.

• Violation of a student rule can result in disciplinary action including a grade penalty, up to and including an F in the course, suspension, dismissal, and expulsion from Texas A&M University. If you have any questions regarding plagiarism or other forms of scholastic dishonesty, please consult the latest issue of the Texas A&M University Student Rules, under Section 20, which can also be found at http://student-rules.tamu.edu/.

• For additional information on academic integrity please review the brochure posted at http://studentlife.tamu.edu/scrs/files/StudentAcademicIntegrity.pdf.
Copyright
The handouts used in this course are copyrighted. By “handouts,” I mean all materials generated for this class, which include but at not limited to syllabi, notes, quizzes, exams, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts unless I expressly grant permission.

Presentation Standards for Assignments
It is expected that as graduate students, you already know and follow professional practices for presentation of your work. However, the following presentation standards are provided as minimum requirements. These standards must be followed to receive full credit for your work.

1. Work must be prepared on engineering paper. Please use pencil to avoid crossing out mistakes. Work that is printed from a computer may be on standard printer paper.
2. Begin each problem on a new sheet of paper. Use only one side of the paper. Staple the pages for the complete assignment together.
3. The complete solution to each problem must be neat and legible. Homework that cannot be deciphered will receive a warning the first time and a grade of zero if this continues to be a problem.
4. Provide a title page with course and section number, full name and signature, assignment number, date assigned and date due.
5. For additional pages use heading with name, date, course number and page number.
6. Use consistent units and state them clearly.
7. Organization of problem solution:
   - Problem: Give problem number.
   - Given: State known facts about the problem.
   - Required: State what you intend to find. Be clear and concise.
   - Solution: Present the solution in a stepwise logical fashion. Add comments for clarity and clearly list all assumptions. Include appropriate diagrams and sketches with pertinent dimensions, etc. Clearly indicate the answer. UNITS!