ENCE 3680 – Design of Concrete Structure  
Spring 2015  
University of Tennessee Chattanooga  
Department of Civil Engineering

Meeting Time:  Tue & Thu, 9:25-10:40 A.M. 
Classroom:  220 EMCS

Instructor:  Dr. Weidong Wu  
Office:  440B EMCS  
Phone:  423-425-5822  
Email: Weidong-Wu@utc.edu

Office Hours:  Open door policy or by appointment

Disabilities:

If you are a student with a disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) and think that you might need special assistance or a special accommodation in this class or any other class, call the Disability Resource Center (DRC) at 425-4006 or come by the office, 102 Frist Hall  
http://www.utc.edu/Administration/DisabilityResourceCenter/.  
If you find that personal problems, career indecision, study and time management difficulties, etc. are adversely affecting your successful progress at UTC, please contact the Counseling and Career Planning Center at 425-4438 or  
http://www.utc.edu/Administration/CounselingAndCareerPlanning/.

Books and References:

3. ACI (American Concrete Institute), Building Code Requirements for Structural Concrete (ACI 318-11) and Commentary. (Recommended)
4. ASCE/SEI 7-10 Minimum design loads for buildings and other structures, ASCE (Recommended)

Other course materials

1. Lecture notes:  
The instructor will use-Blackboard (BB) **extensively**, the Powerpoint lecture notes (in pdf) will be posted one day before each lecture. Homework and exam scores and any other copyrighted materials which are not appropriate for public release
will be posted on Blackboard. It is your responsibility to check BB frequently for assignments, quiz, tests, handouts, announcements etc.

2. Concrete design software packages:
   MS Excel, or SAP2000. Students may request an evaluation copy through http://www.csiamerica.com/support/downloads and select SAP2000. CSI will send an email with download link within several days or in a very short time. The instructor may also supply templates of Excel which could be used for some concrete members design purpose.

Prerequisite:
You must have completed ENCE 3640 - Structural Analysis with a grade of C or better.

Course Description:
Design of concrete beams in flexure and shear, one-way slabs, T-beams, doubly reinforced beams, columns, development lengths, and serviceability based on the ACI Codes of Practice. Computer applications used as applicable. Spring semester. Lecture 3 hours

Course Objectives:
By the end of this course, you will understand the fundamental principles and behavior of reinforced concrete. You will be able to analyze and design the following reinforced concrete members / components based on the ACI 318 code:

- Beams (for flexural/bending and shear)
- One-way Slabs
- T-beams
- Doubly reinforced beams
- Deflections, Cracking and Development Lengths
- Columns
- Isolated and Continuous Footings (optional)
- Concrete structure members design and analysis by using Excel or SAP2000

Attendance Policy:
Class attendance is not mandatory but it is strongly suggested that you attend class. Attendance at every class is expected. If you miss a class, it is your responsibility to get notes and announcements from one of your classmates. However attendance will be taken throughout the semester and will be used as a determining factor when making decisions regarding borderline grades.

Use of cell phones:
The use of cell phones is prohibited during the entire class period. Anybody using a cell phone at anytime during the lecture will be asked to leave the lecture room immediately and will not be allowed to return during the lecture. Persistent abuse of this policy will result in disciplinary action.
Grading:

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<th>Test 1</th>
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<td>Project</td>
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<td>Final Exam</td>
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<td>Assignments</td>
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Grading Scale:

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<th>Letter Grade</th>
<th>% of Total Points</th>
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<tr>
<td>A</td>
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<td>B</td>
<td>80 – 89.9</td>
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<td>C</td>
<td>70 – 79.9</td>
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<td>D</td>
<td>60 – 69.9</td>
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<td>F</td>
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Your weighted total score will be calculated and posted through grade center on Blackboard throughout the semester. Students having difficulty are encouraged to seek help from the instructor before it is too late.

Homework:

Homework must be turned in on the due date through BLACKBOARD. Late homework without an acceptable excuse will not be graded. A 10% penalty may be applied if the following requirements are not followed:

1. All homework packages must include a cover sheet which shows the student’s name, homework number and date. ALL homework in pdf or word format MUST be turned in through BLACKBOARD. NO hard copy. You are encouraged to type while scanned nice and neat hand-writing work is acceptable. You may need a scanner to scan your hand writing work. Graded homework assignment will be available for review on Blackboard.

2. Any assumptions that are made must be clearly stated. References must be made for any values taken from tables and equations of the textbook or ACI code.

3. All calculations must be done neatly and legibly. Unreadable handwriting will not be deciphered.

4. The calculations should be done in a logical and organized fashion. The final answers must be clearly shown and highlighted or boxed.

5. Students may use software packages such as SAP2000, Excel, and Matlab to complete their homework. If software is used, example calculations should be provided in support of the final answers.

6. Each problem should begin at the top of a new page, clearly label the problem.
More about homework:

1. Multiple problems may be assigned each time but only 2 or more random questions will be graded. The answers to ungraded problems may be available on BLACKBOARD after the assignment is graded. Each set of HW will be assigned in the beginning of chapter and due several days after the end of that chapter.

Project:

Group design project

Each group is encouraged to identify its own design problem or some comprehensive design works will be assigned by the instructor. Both hand calculation and computer modeling are expected in the project report. The role of each student should be described explicitly in the project report. Each group will be required to present its design work during the last two classes.

Tests/Exams:

1. Test may be a combination of computer based (CBT through BLACKBOARD) and paper based test. Sample CBT will be available on BLACKBOARD at a later time.

2. Laptops may be used to take notes. However, laptops and cell phones may not be used in place of a calculator during exams.

3. Make-ups for graded homework and tests/exams are possible ONLY with a valid written medical or university excuse. It is the student’s responsibility to provide the instructor with written excuse and to arrange for any make-up tests/exams.

Students do NOT need to turn in a portfolio at the end of the semester.

Academic Honor Code

All students are expected to do their own work. However, collaboration and consultation during out of class assignments are strongly encouraged to foster the spirit of team work which is essential for engineering practice. After interacting with your classmates, you must do the work yourself if you are to gain the level of knowledge and competence expected of an engineer.

Note:

(1) The instructor reserves the right to change aspects of this syllabus, if it becomes necessary, to improve pedagogy.

(2) It is the responsibility of the student to keep informed of changes, new materials, missed content, etc.

Important dates:
January 11  -------------- last day to register for day or evening class
January 18  -------------- last day to drop a class before a W is recorded
January 18  -------------- Martin Luther King Holiday
March 08  -------------- last day for withdraw with a W
March 09-15  ------------ Spring Break
April 03  -------------- Holiday
April 20  -------------- Last day of spring semester
April 22-28  ------------ Final Exam week