Department of Civil Engineering
The University of Texas Arlington

CE 4347 – REINFORCED CONCRETE DESIGN
Fall 2013

Prerequisite: CE 3341 Structural Analysis

Instructor: Dr. Shih-Ho (Simon) Chao, Ph.D., P.E.

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Faculty Profile: https://www.uta.edu/mentis/public/#profile/profile/view/id/1915/.

Office Hours:

- Tuesdays and Thursdays, 11:00 AM-12:30PM
- Questions via e-mail
- Or by appointment

Section Information: CE 4347-001

Time and Place of Class Meetings: August 22 to December 3; Tuesdays and Thursdays, 9:30 AM-10:50 AM, NH 203

Course Content:

1. Introduction
2. Material Properties
3. Behavior and Flexural Strength of R/C Sections
4. Flexural Design of R/C Beams and One-Way Slabs
5. Shear Design of R/C Beams
6. Development Lengths, Bar Cutoffs and Continuity Details
7. Serviceability
8. Analysis and Design of Short Columns Subject to Axial Load and Bending
9. Analysis and Design of Slender Columns Subject to Axial Load and Bending (if time allows)

Student Learning Outcomes:

To develop an understanding of performance and design methodology for Basic Reinforced Concrete Structural Elements. In addition this course will focus on the following:

(a) Apply knowledge of mathematics, science and engineering
(b) Designing a component to meet desired needs
(c) Identify, formulate, and solve engineering problems

(d) Understanding professional & ethical responsibilities
(e) Understand the impact of an engineering solution in a global and societal context
(f) Recognize the need for engineering in life-long learning
(g) Knowledge of contemporary civil engineering issues
(h) Using technique, skills and modern engineering tools

Computer Programs:

- *StructurePoint package* (http://www.structurepoint.org/): *spBeam, spColumn spSlab, spWall, spMats)* will be available in computer lab.

- *RISA-3D* (http://www.risatech.com/p_risa3d.html) is also available in the computer lab. The user's manual can be found under one of the folders.

- Please contact Lewis Crow (lcrow@uta.edu) if you have any problem in running this program.

Required Textbooks and Other Course Materials:

Reinforced Concrete – Mechanics & Design, Sixth edition by J, K. Wight, and J. G. MacGreGor, Pearson, 2012. (**Required**)

Other references:

ACI Building Code Requirements for Structural Concrete (ACI 318-11) and Commentary.

Major assignments and examinations:

Homework:

- Homework problems will be assigned each Tuesday (or Thursday) and are generally due the following Tuesday (or Thursday).
- Homework will be collected at the beginning of class on the due date. A late homework loses 30% per day.
- Students are encouraged to see the GTA and instructor about those assigned problems the student is having trouble with.
- Students are also encouraged to work in small groups to develop solutions to the problems but each student must write up his/her own homework. No credit will be given for homework copied or if your homework has been copied.

Term Project:

Topic of the term project and names in each group will be announced after the first mid-term exam. Final presentation of the term project is on Tuesday December 3 during lecture and the report is due on the same day.

Examinations:

There will be two mid-term exams (in class) and a final examination (comprehensive). The exams are open book/notes but no computer program is allowed. All answers for the exam problems must be justified. Seats will be assigned for all exams.

Scheduled exam dates are:

First mid-term: October 10 (Thursday), 9:30 AM-10:50 PM; NH 203
Second mid-term: November 14 (Thursday), 9:30 AM-10:50 PM; NH 203
Final exam: December 12 (Thursday), 8:00 AM-10:30 AM; NH 203

Make-up Exam Policy:

Makeup exams are given only in extreme circumstances; examples of extreme circumstances are serious illness of the student (doctor's note required) or death in the family. I must be contacted before the exam if such a circumstance applies to you.

Make-up Classes:

Will be announced later.

Attendance: required.

Grading: The course grade will be based on:

20% - Homework
40% - Two mid-term exams
15% - Term project
25% - Final exam

100%

Final exam will not be returned, but may be reviewed by students.

The grade assigned to the student's numerical average will be as follows:

(a)	90 to 100 average	=	A
(b)	80 to 89.9 average	=	B
(c)	70 to 79.9 average	=	C
(d)	60 to 69.9 average	=	D
(e)	< 60 average	=	F

Drop Policy:

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Americans with Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity:

Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

> *I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*
>
> *I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Student Support Services:

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Lab Safety Training:

[Required for laboratory courses in the Colleges of Engineering and Science] Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned. [As necessary, continue with specific course-based information regarding the module(s) required, etc.]

Electronic Communication:

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey:

At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week:

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures:

Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the end of the hallway. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Librarian to Contact:

Sylvia George-williams (Sylvia@uta.edu), Science & Engineering Librarian.

Course Schedule:

"*As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.*

8/22-8/29: Introduction
9/3-9/10: Material Properties
9/12-9/26: Behavior and Flexural Strength of R/C Sections
10/1-10/8: Flexural Design of R/C Beams and One-Way Slabs
10/15-10/29: Shear Design of R/C Beams
10/31-11/12: Development Lengths, Bar Cutoffs and Continuity Details
11/19-11/21: Serviceability
11/26: Analysis and Design of Short Columns Subject to Axial Load and Bending
Analysis and Design of Slender Columns Subject to Axial Load and Bending (if time allows)

Library Home Page	http://www.uta.edu/library
Subject Guides	http://libguides.uta.edu
Subject Librarians	http://www.uta.edu/library/help/subject-librarians.php
Database List	http://www.uta.edu/library/databases/index.php
Course Reserves	http://pulse.uta.edu/vwebv/enterCourseReserve.do
Library Catalog	http://discover.uta.edu/
E-Journals	http://liblink.uta.edu/UTAlink/az
Library Tutorials	http://www.uta.edu/library/help/tutorials.php
Connecting from Off- Campus	http://libguides.uta.edu/offcampus
Ask A Librarian	http://ask.uta.edu