Department of Civil Engineering
University of Texas at Arlington

CE 5308/4360 Structural Masonry Design
Course Syllabus
Fall 2017

Instructor: Raad Azzawi,Ph.D,P.E./STR
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Profile:
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Office Hours: W 1:00 pm – 5:00 pm
(Quastions via email or by appointment)

Lecture: **TuTh** 2:00pm – 3:20 pm
NH203

Prerequisite: CE 3341 with a grade of C or better and Civil Engineering-BSCE academic plan.

Required Textbook:
Masonry Structural Design, by Richard E. Klingler, 2010.

Building Code Requirements for Masonry Structures:
(TMS 402-13 / ACI 530-13 / ASCE 5-13) and Specification for Masonry Structures (TMS 602-13 / ACI 530.1-13 / ASCE 6-13)

Course General Content:
Covers masonry unit type and grades of mortar types, reinforcing and connectors. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building codes, Masonry Standard Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4360 and CE 5308. Prerequisite: Grade of C or better in CE 3341.

Tentative Course Outline:

Day	Date	Syllabus
Th	Aug 24	Course Syllabus
TuTh	Aug 29-31	Introduction to Masonry Structures, Masonry Standard Joint Committee (MSJC) specifications
TuTh	Sep 05--07	Mortars, Mortars Joints, types of Masonry units, bond patterns and expansion control.
TuTh	Sep 12-14	Concrete Masonry Units (CMU) types, shapes and sizes, Shrinkage and expansion control, Grout, fire resistance of masonry walls, Bearing walls construction, bond beams, floors and roofs deck connections to walls.
TuTh	Sep 19-21	Design Loads, Masonry Compressive strength, density, modulus of elasticity, bond strength absorption, durability, mortar grout and steel bars.
TuTh	Sep 26-27	Masonry Walls design methods (ASD vs SD)
TuTh	Oct 03-05	Wall Design (Flexure -Unreinforced), Wall Design (Flexure -Reinforced)
TuTh	Oct 10-12	**Midterm I Exam (Oct 10th)**
TuTh	Oct 16-18	Wall Design (Axial compression and Flexure -Unreinforced)

TuTh	Oct 24-26	Design of fully grouted masonry retaining wall.
Tu Th	Oct 31-Nov 02	Columns vs pilasters, Masonry Columns Design
TuTh	Nov 07-09	Design of Multi-Wythe composite sections, Design of Beams and Lintels
Tu Th	Nov 14-16	**Midterm II Exam (Nov 14th)**
Tu	Nov 21	Seismic design and detailing requirements for masonry structures.
TuTh	Nov 28-30	Lateral Load analysis of Masonry Shear Walls
Tu	Dec05	**Term Project Presentation**
Tu	Dec12	**Final Exam** (2 – 04:30pm)

- 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. Dr.Raad Azzawi

Student Learning Outcomes:
This course will focus on the following student educational outcomes:
An ability to apply knowledge of mathematics, science, and engineering TI
An ability to design a system, component, or process to meet desired needs TI
An ability to identify, formulate and solve engineering problems TI
An understanding of professional and ethical responsibility CI
The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context CI
A recognition of the need for, and an ability to engage in life-long learning CI
A knowledge of contemporary issues CI
An ability to use the techniques, skills and modern engineering tools necessary for engineering practice TI
Covered Implicitly ($\mathbf{C_I}$): The outcome is implicitly covered
Covered Explicitly ($\mathbf{C_E}$): The outcome is explicitly covered
Tested Implicitly ($\mathbf{T_I}$): The outcome is covered and implicitly assessed for by one or more means (assignments, test questions, essay questions, presentation evaluations, lab reports, etc.)

Homework:
A number of relevant homework problems, grouped into one or more problem sets will be assigned on the class blackboard or given in class at the end of lecture. For homework assigned on blackboard, student will be required to upload the assignments solution into blackboard before the due date. Late submission will NOT be accepted unless arrangement has been made in advance with the instructor.
For homework given in class, assignments will be collected in class at the beginning of a lecture in hard copy at the specified due date. Late Homework will NOT be accepted unless arrangement has been made in advance with the instructor. Homework are suggested to be in a standard format. This includes: (a) statement of the problem (with a sketch); (b) quantities with given values; (c) quantities to be found; and (d) solution of the problem.
Work MUST be done in pencil and must be neat and readable. Draw a box around the answer(s). DO NOT WRITE IN THE BACK OF THE PAGE.

Make-up Exams Policy:
Makeup examinations are not given. If an examination is missed as a result of an illness or because of a University Authorized Absence, the weight of the missed examination will be added to the weight of the final examination when the class grade is determined. It is the responsibility of the student to provide acceptable, written documentation for absences that occur on the day of an examination. http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#5 in the UTA catalog at discusses University Authorized Absence. If arrangements are made well in advance, an examination can usually be taken before the scheduled time and a more lenient excuse policy is applied.

Make-up Classes:
Will be announced later.

Grading:

Exam	Weighting of grades
Assignments	10%
Term Project	20%
Midterm Exam I	20%
Midterm Exam II	20%
Final exam	30%
Total weight	**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

Distance learning students need to take the exams (midterms and final) at the same day with the regular class. It is the responsibility of distance learning students to contact the distance learning office in UTA and register their testing centers at the beginning of the semester and coordinate with their testing center to schadule their exams.

Class Participation

Class participation can be achieved in two ways. I shall ask you questions in class on the previous lectures, and on the material currently being discussed. You should be prepared to answer these questions, and should also participate by asking questions, suggesting ideas, and performing in-class group activities that I assign. I prefer an interactive classroom where the instructor and the students freely participate in active learning. Of course, you cannot participate in class unless you attend it!

Policies:
In general, the class will be conducted in accordance with the policies given below. However, it is impossible to anticipate every possible circumstance. The instructor reserves the right to modify the given policies or to deviate from them in unforeseen or unusual circumstances. If there is a policy that you anticipate will affect you in a way that seems unfair, please bring it to the attention of the instructor before the end of the second week of class. After that, the reason for a student initiated change in policy must be compelling.

Dropping the Course:
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. For Engineering students, added classes must be on the list approved by the academic advisor. 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. Contact the Financial Aid Office for more information.

Academic Integrity:
It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."
The College of Engineering has a "Statement on Ethics, Professionalism, and Conduct for Engineering Students" which may be downloaded from www.uta.edu/engineering/coees.doc. Each student is responsible for understanding and acting in accordance with this document.

Grade Grievances: The university policy regarding "Student Grievance Procedures Related to Grades" is explained in item 6 at http://wweb.uta.edu/catalog/content/general/academic_regulations.aspx#10.

Electronic Communication Policy:
The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account**. Students are responsible for checking their MavMail regularly**. Information about activating and using MavMail is available at http://www.uta.edu/oit/email/. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

Student Support Services Available:
The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

Librarian to Contact: Sylvia George-Williams, sylvia@uta.edu, Science & Engineering Librarian.

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.

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.