

MEMORANDUM FOR STUDENTS ENROLLED IN CMGT 4313 Structural Applications for Concrete

SUBJECT: CMGT 4313 Administrative Instructions, Spring 2023

1. **Welcome to CMGT 4313 – Applied Construction Structural Systems.** In this course, you will learn to analysis and design reinforced concrete structures and other structures as time allows. A tentative course schedule and introduction to instructor are provided in Attachments 1 and 2. Specific course objectives are provided in Attachment 3.
2. **Attendance: This is a Hybrid and Zoomed course.** You are expected to attend all face-to-face classes either in person or via Zoom, and watch all online lectures. Lectures and class discussions will contain vital information needed to do well on the exams. It is your responsibility to sign the attendance roster each class period. If you attend via zoom, type your name in Zoom Chat.
If you know that you will miss a class, email me a note to that effect prior to the class. If your absence is unexpected, email me as soon as feasible. If you miss a scheduled class, you are still responsible for the material.
3. **Flipped classroom:** Some classes will be a flipped classroom. This means you must watch the videos for that class online, then attend class to work on the homework assignments. If you do not attend class, you will not receive credit for the assignments assigned that day, even if you turn them in. See Canvas for detailed requirements for each class.
4. **Extra Help:** PLEASE DO NOT WAIT UNTIL THE LAST MINUTE. If you are having trouble with this class, please come by my office during office hours, before/after class, or by appointment. I am also available by email at: aarnold@uttyler.edu. I will also schedule Zoom meetings as needed.
5. **Class Room Procedures:**
Bring study notes, handouts, note-taking material, and calculator to every class. Class preparation is your individual responsibility.
6. **Course Materials:**
 - a. Textbook, optional:
Reinforced Concrete Design, Seventh Edition by George F. Limbrunner, . Abi O. Aghayere, 2010, ISBN: 9780135046821
Reference Material: *AISC Manual of Steel Construction*, 14th Edition
 - b. I will provide other materials throughout the course.
 - c. In some cases, I expect you to follow problem examples given in the Canvas modules that may differ significantly than the way it is performed in the text book or other online sources.
 - d. I will post all course materials including class PowerPoint's on Canvas. Canvas enrollment should be automatic with course registration, but ensure that you can access the class Canvas page.

e. All assignments will be posted on Canvas on the class schedule. It is your responsibility to check the site for changes and addendums.

7. **Exams and Grading:**

a. Grade Breakout and Cutoffs:

Course Points

Assignments / Quizzes	685 (34.3%)
Team Project	215 (10.8%)
Professional Practice	100 (5%)
Midterm Exams (3 at 200 each)	600 (30%)
Final Exam	<u>400 (20%)</u>
	2,000 (100)

University grade breaks will be used in final grade posting.

If you earn a cumulative average of less than 65% on all exams, or if you fail to earn at least 50% on the final exam you may fail the course, **regardless of your course grade.**

b. All grades will be posted on Canvas. It is your responsibility to monitor your grades to determine if you are achieving the grade you desire.

c. Mid-term Exams and Final Exam:

- 1) The dates for all exams are included in the course schedule. Official reasons for missing an exam are outlined in the UT Student Handbook. You are required to take a make-up Exam, regardless of your reason for missing the scheduled Exam. Report any conflict to me as soon as possible prior to the Exam.
- 2) The mid-term and final exams are closed book. You may use a calculator and one 8.5" x 11" page of your handwritten notes on your exams.

d. Cell Phones: Please remember to turn off sound to phones prior to class.

e. Collection of Student Work: Throughout the semester I will collect student work (best, average, and worst) for the accreditation course and outcomes notebooks. This will require me to make a copy of your work, keep your original and return a copy of the graded work to you. It will not draw attention as to what level of work you accomplished.

f. Embedded indicators of accomplishment of program outcomes: At times throughout the semester, portions of student work will be analyzed to determine if our program is accomplishing stated program outcomes based on established metrics.

7. **Assignments:** Homework problems will typically be assigned on a daily basis. Students are encouraged to *discuss* their homework solutions with one another, but each student must submit their own, **independent** work. The homework due dates and times will be clearly given with the homework assignment on Canvas. Hand written homework is due by 5:00pm on the due date. For some homework, you will be required to work it during the class time. You must attend class to get credit for those assignments. Hand written homework may be turned in during class if we meet that day or directly to me in my office (or under the door if I am not there). Some assignments will be submitted on Canvas.

Assignment Format: The student is expected to present professional, neat, organized, high-quality assignments. An assignment should be something you are proud of and not something hastily “slapped together”. Assignments that are unreadable will be marked wrong. As a construction manager your goal is to make a clear, logical, and professional presentation of your work, which is both accurate and correct. As such both your presentation and the accuracy of your work are important, and both will be graded. It is critical that you show all your work and leave “footprints” so that it can be easily followed. This means that equation numbers, figures, or other tools used should be clearly identified.

a. Problem Sets:

1) **Use professional looking paper only or full-page printouts from Mathcad, Excel, etc.** You may neatly tape or glue short computer printouts onto the submittal at the appropriate place in the logical flow of the problem. Many problems require a “Given, Find, Formula, Solution” format. Clearly present a **brief problem statement and a sketch** as the “Given” portion. Clearly and concisely explain each step. Many of my Example Solutions have numbered steps, include these numbered steps as part of the solution. For narratives of more than a line or two, use your word processor or the text capability if you are using MathCAD or Excel. If you are writing out a paragraph or more, you must type it.

2) Late Submissions. It is a basic principle of professionalism that “**Professionals are not late.**” A “COORDINATED LATE” submission occurs when you will miss the deadline for a graded homework assignment, and you contact me in advance. Notification immediately before the submission will not suffice. Deductions to your assignment grade for late submissions will be given as follows:

- | | |
|----------------------------|--|
| 1. 1-24 hours late | a deduction of 25% of the earned grade |
| 2. 24-48 hours late | a deduction of 50% of the earned grade |
| 3. More than 48 hours late | No credit. |

Obviously there are circumstances that can occur that make a timely submission impossible and I will work with you when and if they occur.

b. Assigned readings and videos: Doing the assigned readings and watching the videos prior to class will help you to understand the material presented during the instruction and will fill in gaps for things we do not cover (***I will not cover everything***). It will also make you more familiar with terms and concepts to be covered. Being prepared for class will enhance your ability to learn!

c. **How to watch a video lecture:** All video lectures come with a power point. Print out the power point and take notes. In some cases I expect you to complete the math for problem solutions. Do it and check that you get the correct answers on your calculator. This ensures that you understand how to type in complicated formulas on your calculator. If you do not understand a portion of the video, watch it again. If you still don’t, ask your class mates for help. If you still have a problem, come to me as a group and I will work with you.

8. **Extra credit:** There is none. Students who keep up with their assignments, labs, and prepare for the exams will do well in this class.

9. **Professional Practice.** During this semester, a portion of your grade in this course (10%) will be derived from a level of professional practice expectations. These expectations include a professional demeanor and work ethic (attitude), consistent daily preparation (assignment reading, appropriate materials brought to class, etc.), commitment to learning and fulfilling obligations (attendance, on time), and being engaged in class activities (participation).
10. **Academic Misconduct:** Plagiarism of homework and cheating on examinations will be interpreted as academic misconduct and will not be tolerated. Please refer to the University of Texas at Tyler current Undergraduate Catalog for academic policies and Manual of Policies and Procedures for Student Affairs (MOPPS, Chapter 8) regarding academic integrity, cheating and plagiarism. Academic dishonesty will not be tolerated. Ignorance of the rules and policies provides no protection from the consequences.

See Canvas for UNIVERSITY POLICIES AND ADDITIONAL INFORMATION THAT MUST APPEAR IN COURSE SYLLABUS

Attachment 1 Course Schedule

CMGT 4313 – Structural Applications for Concrete Course Schedule – Spring 2023 MW 2:30-3:55pm				
Les. #	Topic: Watch all videos before coming to class.	ASGN #	Homework	Resources
Week 1				
1	Introduction: Materials Used in Making Reinforced Concrete	A1	Intro Wiki	Materials Used in Making Reinf Concrete Video & PPT
2	Properties of Reinforced Concrete Example Problems Video	A2	Concrete Properties	Properties of Reinf Concr Vid How to HW Problems Video
Week 2				
3	MLK Day			
4	Details and Detailing of Concrete Reinforcement; CRSI Placing Drawings; Design Construction Process; How reinforcing steel is fabricated			Detailing of Concrete Reinf CRSI Report Detail Dwg CRSI Placing Drawings pdf, Design Constr Process Video How reinf steel is fabricated
	Reading Foundation Drawings	A3	Questions R001-R007	In Class Placing Drawing R001-R004
Week 3				
5	Reading Column Steel and Earthquake Stability	A4	How to Read Column Plans	R010 - R019 Earthquake Hazard Info 1
	Reading Basement Wall and Shear Wall Drawings, Crane Foundations	A5	How to Read Wall Plans	R020-R024 Read Basement Wall Video, Crane Foundations Video
6	Cast in Place Beams and Floors Pan forms concept to completion, NS10-2pans	A6	How to Read Beam Plans	R029-R039 R051-R060 Read Beam Video
	Reading Highway Structures Drawings	A7	Bridge Dwg H3	Highway Drawing H-3
Week 4				
7	Chapter 5 Development & Splices	A8a		Chapter 5 Development & Splices Video
8	Crane Foundations – Video	A8b		Crane Foundations – Video
	Materials & Mechanics of Bending	A9	Problems Unreinforced Concrete	Materials & Mechanics of Bending Video AISC Shear & Mom't Diag.
Week 5				
9	Review for Exam 1			Exam over Reading drawings and videos thru Feb 1.
10	Midterm Exam #1 Online and Takehome			See Canvas for details
Week 6				
11	Chapter 2 Reinforced Concrete Strength Design Method	A10	Reinforced Beam Problems	Chapter 2 Reinforced Concrete Video
	Reinforcing Steel Clearance & Spacing	A11	Clearance Problems	Reinforcing Steel Lightboard Video
12	2-7 & 8 Rect. Beam Analysis	PQ A12	Beam analysis	2-7&8 Rect. Beam Analysis 2-10 Rect. Beam Analysis
	Explanation for Beta1 (β_1) and Phi (ϕ)	A13	Beam Strength	2-9 Strength Requirements Beta1 and Phi

Week 7				
13	BeginTerm Project Reinforced Concrete Beams: T-Beams	A15	T-Beams	Begin Term Project - Beam & Slab Design
	2-12 Oneway slabs	A14	Slab Analysis	2-12 Slabs Handout
14	Doubly Reinforced Beams	A16	Doubly Reinforced Beams	3-7 Doubly Reinforced Beams Handout, Example Problem 3-6
Week 8				
15	Bubble Slabs / Pan Forms	A27	Bubble Slabs	Roof Slab Design Due Bubble Slabs PPT
16	Review for Exam 2			
Week 9				
17	Midterm Exam #2 In class			
18	Shear in Beams Shear & Moment Diagrams Light Board Video	A 17 A18 A19	Shear Capacity & steel in Beams	How to determine spacing and size of stirrups, Problem Worked in Video Beam Design for Moment Due
13-18 March		Spring Break		
Week 10				
19	Continuous Construction Design Considerations/Serviceability	A20 A21	Problems	Beam Design for Shear Due
20	Retaining Walls Part 1	A22 A23	Excel Example Retaining Wall	Chapter 8 – Walls H.O. Chapter 7 H.O.
Week 11				
21	Retaining Walls Part 2		In Class Example	
22	Columns, Term Project review	A24	Columns Problems	Review of Preliminary Drawings in Class
Week 12				
23	Footings			Column Design Due
24	Footings	A25	Footing Design	
Week 13				
25	Prestressed Concrete St. Croix Bridge	A26	St. Croix Essay	St. Croix Bridge Construction Videos
26	Rehearsal in Ballroom Printed Poster Due		9 am to 1 pm	
	Senior Design Project Presentation		8 am to 3 pm	
Week 14				
27	Review for Exam 3 Work on Project Report			Wall and footing designs due
28	Midterm Exam #3			
Week 15				
	Study day			
	Finals Week			Final
FINAL EXAM		Project Presentation During Final time		

Attachment 2: Introduction to Instructor:

Instructor: Althea Arnold, PE, PhD

Office: RBS 1035

Office Hours: As posted outside my door

Phone: 903-566-7002

Email: aarnold@uttyler.edu

Spring 2023

Time: Lecture M W 2:30 - 3:55pm

Online any time

Meeting Place: RBN 3039

I have lost count of how many times I have taught a Reinforced Concrete course to both Construction Managers and Civil Engineers. I have taught this course in both the face to face and hybrid formats. This year there will be a mix to provide classroom time where you will come to class and work problems with assistance. I have worked hard to provide you with short to the point videos for each topic and design method. I enjoy working with concrete and have experience designing and building with concrete for both building and bridge structures.

I have previously been on faculty at the University of North Texas and at Texas A&M. I am a Registered Professional Civil Engineer and have over 20 years' experience in the field, working in design and construction management. I have experience in residential, commercial, and heavy civil construction. I have worked in Texas, California, and Maryland. I have also performed research for Texas Transportation Institute in crash testing of highway hardware including concrete bridge rails.

I have a BS and MS in Civil Engineering specializing in structures (especially concrete) and a PhD in Construction Management all from Texas A&M. My specialties are in Building Information Modeling (BIM), Green Building and Robotics in Construction.

I enjoy teaching and like to challenge students to reach their full potential by involving them in the latest construction technologies. I expect students to be engaged in their own learning. I believe that the information, procedures, and techniques I provide students during the courses I teach will help them in the future to obtain and sustain professional and rewarding employment meeting their lifetime goals.

To help you, I am available to answer questions about the courses I am teaching, questions on your schedule and academic progress, student construction organizations, and employment opportunities. Please feel free to drop by my office during office hours, schedule an appointment, or send me an email. I look forward to teaching this class this semester.

Dr. A. Arnold

CMGT 4313 Course Objectives:

1. Understand the structural characteristics of reinforced concrete.
2. Perform an analysis on reinforced concrete structural elements.
3. Perform a design of reinforced concrete structural elements.
4. Effectively use class lectures, text materials, and building models to understand structural systems.
5. Obtain team building skills through a team project.
6. Utilize construction software related to their project.