

University of Texas at Tyler - Department of Civil Engineering
CENG 3434.002 Civil Engineering Materials, Codes and Specifications
Fall 2023

As of August-21, 2023

Instructor: Dr. Kostas Kalfas
RBS 1035
TBA
kkalfas@uttyler.edu

Office Hours:
M/W/F: 10:15AM – 12:15PM
or by appointment

Lectures:

Monday/Wednesday/Friday: 12:20 pm – 1:15 pm, RBS 1031

Laboratory:

Section 001L: Monday: 2:30 pm – 5:15 pm, RBS 1024

Section 002L: Wednesday: 2:30 pm – 5:15 pm, RBS 1024

Course Website:

Canvas will be used to manage the course material for the semester. There you will find homework assignments, solutions, handouts and other material pertaining to the class. **Please check there regularly.**

Catalog Description:

Physical properties of typical construction materials will be investigated including steel, Portland cement concrete, wood, and bituminous asphalt; classification of aggregates, concrete mix design, and field control and adjustment. Application of model building codes to commercial and industrial structures; nonstructural and structural plan review; fire codes, inspection techniques.

Learning Objectives:

1. Explain the properties of materials commonly used in civil engineering.
2. Explain the fabrication or method of manufacture of civil engineering materials.
3. Explain and apply the testing methods commonly used on civil engineering materials.
4. Explain and apply the standards covering the manufacture of civil engineering materials and the testing methods commonly used on these materials.
5. Explain and apply codes, standards and specifications commonly used in civil engineering.
6. Expose the students to the requirement for written presentation of their work.
7. Conduct experiments on civil engineering materials according to the appropriate laboratory procedures.

Prerequisite:

CENG 3306: Mechanics of Materials

Required Text:

Civil Engineering Materials, 2nd Ed, by Shan Somayaji, Prentice Hall, ISBN: 0-13-083906-X

Note about the Syllabus:

This syllabus is a statement of intent about how the course will be taught this semester. It outlines what we will cover, what you will need to do in the course, and it explains what and when you must do it to successfully complete the course and get a great final grade. This syllabus is intended to protect you from arbitrary or untimely changes in course requirements and due dates. But I reserve the right to make changes as necessary to the syllabus with announcement of changes. As we learned during 2020, there are many circumstances outside of our direct course control that may require changes to this syllabus in content and schedule. These will always be announced in advance and the syllabus will be updated on Canvas so all can be aware of the required changes.

Exams:

There will be 2 midterm examinations (held during the scheduled class time) and one final examination. The exams are **TENITATIVELY** scheduled for:

Exam 1: October 2nd

Exam 2: November 13th

Final Exam: TBA

Exams dates may be moved up or pushed back depending on the progress of the lectures. You can use a calculator and instructor approved reference material. Solutions to exams will NOT be posted. No make-up exams will be given except for medical or other similar hardships where advanced arrangements are made with the instructor; or in case of non-selective medical emergencies with appropriate physician's note or documentation. Other than circumstances described above, failure to take the exam at the scheduled time will constitute a grade of zero in the exam. **EXAMS 1 AND 2 WILL BE HELD IN PERSON DURING CLASS TIME. THERE ARE NO EXCEPTIONS. SO YOU WILL NEED TO PLAN ON SHOWING UP TO CLASS DURING THOSE DATES. THE FINAL EXAM WILL ALSO BE HELD IN PERSON AT THE TIME, DATE AND LOCATION ASSIGNED BY THE UNIVERSITY.**

Homework:

Homework will be assigned on a regular basis (see schedule). Homework is due on the date outlined in the schedule. **You will need to upload your homework as a single pdf file to canvas no later than 11:59 pm on the date it is due.** No late homework will be accepted except for unusual circumstances. Homework will not be graded in the traditional sense. You will be given full credit for submitting your homework on time and following the correct homework format. Homework that is not submitted as complete and following the homework guidelines will receive a 0. **Homework must be submitted on engineering paper.** Solutions should be presented in a clear methodical manner. Follow the "homework submission guidelines" when completing your assignment. Solutions which are not clearly presented will **NOT** receive credit.

Laboratory:

There will be a series of labs completed during the semester. There are two sections of lab. If you are in section 003L we will meet for lab on Mondays from 2:30pm-5:15pm in RBS 1024. For section 004L we will meet for lab on Wednesday's from 2:30pm-5:15pm in RBS 1024. **Because we will be working in groups this semester you must attend the lab section you are registered for.** At the first lab, we will go through proper safety training. **You will be required to sign a student safety contract prior to starting the first week's lab.** You will also need to complete an

Environmental Health and Safety (EHS) quiz that will be administered through Canvas. You must score a minimum of 70% on the quiz. You will need to bring a print out of the final page of your safety quiz showing you achieved the minimum required score before you will be allowed to participate in week 2 lab. Everyone is required to abide by the safety contract during the semester. Failure to follow proper procedures during a lab will result in a zero for that particular lab assignment.

Be sure to review the handout and complete all required work prior to coming to lab. This will help to prepare you the experiment and help to make the sessions run smoother. If necessary, a quiz will be given at the beginning of the lab which covers the experiment for the day.

You will work in groups of 3 or 4 to complete each lab. The instructor will assign the groups. Each group will be required to turn in one report for the entire group. **One person from each group must upload the report to Canvas as well as submit a hard copy.** The format for the report is provided with the syllabus. You are encouraging anyone to visit the writing center as they can provide excellent feedback and help you with your writing.

Grades:

Homework = 10%

Online Quizzes = 15%

Professional Practice = 10%

Midterm Exams (2) = 25%

Final Exam = 20%

Labs = 20%

Grade Scale:

A: 90-100

B: 80-89

C: 70-79

D: 60-69

F: <60

If necessary, I reserve the right to adjust the grade scale at the end of the semester to your benefit.

****NOTE:**

There will be no makeup work or extra credit allowed/granted at the end of or during the semester unless allowed/granted to everyone by the instructor. All assignments must be turned in at the appropriate time to receive credit.

Laptops/PDAs/MP3 players/Cell Phones or other electronic devices:

- The use of any electronic device, except an approved calculator, is not permitted during exams. Your exam will be collected and your grade will be a zero if you are caught using a non-approved electronic device/calculators. Any instances of a calculator inappropriately used during an exam will be the basis of alleging Academic Misconduct and may result in Failing (F) of the course at the determination of the course's instructor or the basis for a recommendation for expulsion from the University. Any Calculator used during an exam in this course must meet the requirements stated within the policy below.

Calculator Policy:

Only NCEES approved calculators will be permitted during tests and your test will be collected and your grade will be a zero if you are using a non-approved calculator.

The approved calculators include the following: (Please check the NCEES website for a complete listing, www.ncees.org/exams/calculator-policy/). Examples include but are not limited to:

- Hewlett Packard – HP 33s, HP 35s, and no others.
- Casio – All FX 115 models.
- Texas Instruments – All TI 30X or TI-36X models.
- If you are unsure about your calculator, it is your responsibility to check with the instructor for approval.

At the discretion of the course instructor, any calculator not meeting the requirements stated (especially in the case of a graphing calculator) may be used but only after an inspection of the device and a clearing of all the memory within the device, performed for the instructor at a time immediately prior to the exam. At any time during the exam your calculator is subject to a random search by the instructor. Failure or refusal to clear all memory or to surrender your calculator to search will disqualify you from the exam immediately, unless you can produce a calculator meeting the requirements as stated above.

Final day to withdraw:

The final day to withdraw from the course without penalty is **October 30th**.

Census dates:

The university requires that instructors to report the attendance to the register at various points in the semester. Therefore, on **September 1st** I will report the attendance for the class.

UT Tyler Honor Code: Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Information for Classrooms and Laboratories: It is important to take the necessary precautions to ensure a healthy and successful year. UT Tyler continues to urge you to protect yourselves against the flu, COVID and any new threats that may be developing. Be diligent about preventive measures such as washing hands, covering sneezes/coughs, social distancing and vaccinations, which have proven to be successful in slowing the spread of viruses. Encourage those who don't feel well to stay home, and if they show symptoms, ask them to get tested for the flu or COVID. Self-isolation is important to reduce exposure ([CDC quarantine/isolation guidelines](#)). Please work with your faculty members to maintain coursework and please consult [existing campus resources](#) for support.

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.

Collection of Student Work:

Throughout the semester I will collect student work (best, average, and worst) for the ABET 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. I will not draw attention as to what level of work you accomplished.

Students Rights and Responsibilities: To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:

<http://www.uttyler.edu/wellness/StudentRightsandResponsibilities.php>

Grade Replacement/Forgiveness and Census Date Polices: Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date).
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade).
- Being reinstated or re-enrolled in classes after being dropped for non-payment.
- Completing the process for tuition exemptions or waivers through Financial Aid.

State-Mandated Course Drop Policy: Texas law prohibits a student who began college for the first time in fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services: In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University

of Tyler at Texas offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including non-visible a diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

Student Absence due to Religious Observance: Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities: If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement: It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation: Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services

Student Standards of Academic Conduct: Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but 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.

- i. "Cheating" includes, but is not limited to:
 - copying from another student's test paper;
 - using, during a test, materials not authorized by the person giving the test;
 - failure to comply with instructions given by the person administering the test;
 - possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;

- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
 - collaborating with or seeking aid from another student during a test or other assignment without authority;
 - discussing the contents of an examination with another student who will take the examination;
 - divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructor has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
 - substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
 - paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
 - falsifying research data, laboratory reports, and/or other academic work offered for credit;
 - taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
 - misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.
- ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.
- iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
- iv. All written work that is submitted will be subject to review by SafeAssign™, available on Canvas. UT Tyler Resources for Students
- [UT Tyler Writing Center](#) (903.565.5995), writingcenter@uttyler.edu
 - [UT Tyler Tutoring Center](#) (903.565.5964), tutoring@uttyler.edu
 - The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
 - [UT Tyler Counseling Center](#) (903.566.7254)

UT Tyler a Tobacco-Free University: All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Campus Carry: We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

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COURSE SCHEDULE – SUBJECT TO REVISION

CENG 3434.002: Civil Engineering Materials, Codes & Specifications - FALL 2023 (RBS 1031; MWF 12:20 pm – 1:15 pm)

Lesson No.	Date	Topic	Lesson Material (Hibbeler 10 th Ed.)	Homework Assigned (TBA)	Assignment Due (TBA)
WEEK 1					
	8/21	No lab - First week of class			
1	8/21	Material types, properties and standards for testing and design	Chapter 1		
2	8/23	Aggregates	2.1-2.3.3		
3	8/25	Sampling and particle size distribution	2.3.4		
WEEK 2					
	8/28	No lab week			
4	8/28	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5		
5	8/30	Concrete and Cement - Cement Behavior and Composition	3.4.3-3.4.6		
CENSUS DATE					
6	9/1	Properties of Good Concrete	3.5-3.7		
WEEK 3					
	9/4 & 9/6	No lab week			
-	9/4	Labor Day Holiday - No Class			
7	9/6	Concrete Properties - Field Testing and Curing	3.7-3.7.4		
8	9/8	Properties of Hardened Concrete	3.8-3.8.5		
Week 4					
Lab 1	9/11 & 9/13	Aggregate: Moisture Content, Unit Weight, Sieve Analysis, Absorption Capacity	AGG-1,AGG-3,AGG-7		
9	9/11	Concrete Properties, Creep and Shrinkage	3.8.6-3.9.4		
10	9/13	Concrete Mix Design	3.10		
11	9/15	Concrete Types & Ch. 19 IBC	3.11-3.13, IBC 19		

Week 5			
Lab 2	9/18 & 9/20	Tension Test of Metals	
12	9/18	Introduction to Steel	7-7.2
13	9/20	Steel Types and Properties	7.2-7.3
14	9/22	Structural Steel	7.4-7.4.1
Week 6			
Lab 3	9/25 & 9/27	Making Concrete: Batching, Mixing, Slump Test, Construct Concrete Cylinders	CON-1,CON-2,CON-3,CON-4
15	9/25	Reinforcing Steel	7.5-7.7
16	9/27	Laboratory Strength Test of Steel	Cordon Book
17	9/29	Introduction to Masonry	4-4.1.3
Week 7			
	10/2	No lab week	
-	10/2	EXAM 1	-
18	10/4	Properties and Size of Masonry Units	4.1.4-4.1.8
19	10/6	Mortar and Grout	4.2-4.2.3, 4.2.4
Week 8			
Lab 4	10/9 & 10/11	7 Day Concrete Strength Test	CON-3
20	10/9	Masonry Construction	4.3.1
21	10/11	Properties of Masonry	4.3.2-4.5
22	10/13	Introduction to Timber	5.1-5.3.3
Week 9			
Lab 5	10/16 & 10/18	Construct Masonry Prisms	MAS-3,MAS-5
23	10/16	Defects, Deterioration, and Shrinkage of Wood	5.3.4-5.5.1
24	10/18	Classification of Wood for Construction	5.9-5.9.1
25	10/20	What Happened? Failure Modes of Wood	5.6-5.8.2

Week 10			
Lab 6		7 Day Masonry Prism Crush Test	
Lab 7	10/23 & 10/25	28+ Day Compressive Strength of Cylinders	CON-3 / MAS-8
26	10/23	Wood Products	5.9.2, 5.10-5.10.2
27	10/25	Wood Construction and Load Path	5.10.3-5.12
28	10/27	Wood Testing	Cordon, IBC 23
Week 11			
-	10/30	Last day to withdraw from one or more courses	-
Lab 8	10/30 & 11/1	High Strength Concrete Lab	-
29	10/30	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3
30	11/1	IBC Chapter 6: Construction Types	IBC Chapter 6
31	11/3	IBC Chapter 5: General Building Height and Area	IBC Chapter 5
Week 12			
Lab 9	11/6 & 11/8	Timber Lab: WOOD 2, 3, 4	WOOD-2,WOOD-3,WOOD-4
32 & 33	11/6	ASTM Overview; Asphalt Types	PowerPoint; 6.2-6.4
34	11/8	Properties of Asphalt	6.4-6.5.3
35	11/10	EXAM 2 - Review; HMA and Flexible vs. Rigid Pavements	6.6-6.7.2
Week 13			
Lab 10	11/13 & 11/15	IBC Chapter 5 and 6 Lab	-
-	11/13	EXAM 2	-
36	11/15	IBC Chapter 10: Means of Egress	IBC 10 (PowerPoint)
37	11/17	Plastics	Chapter 8
Week 14			
-	11/20 - 11/24	THANKSGIVING CLOSURE	-

Week 15			
	11/27	No lab week - Final week	
38	11/27	TBA	-
39	11/29	FE Review Video	-
-	12/1	High Level Exam Review	-
Week 16			
12/4 to 12/8			
Final Exams			
Week	TBA	COMPREHENSIVE FINAL EXAM	-