University of Texas at Tyler - Department of Civil Engineering
CENG 3434 Civil Engineering Materials, Codes and Specifications
Fall 2021

	Tyler Section 001	
Instructor:	Dr. Michael Gangone	Office Hours:
	RBS 1009	MON/WED/FRI: 9 am – 10 am
	(903) 565-5872	THURS: 2PM-3:30PM
	mgangone@uttyler.edu	or by appointment

Lectures:
Lectures for this class will be completely online. Each lecture is pre-recorded and will have a short required quiz associated with that lesson. The lecture material and quizzes are posted on the Canvas site.

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:
The lectures for this course will be administered completely online through Canvas. The laboratories will be face-to-face during the designated lab times. Canvas will be used to manage the course material for the semester. There you will find announcements, homework assignments, solutions, handouts, lesson videos 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.

Corequisites:
CENG 3306 or MENG 3306: Mechanics of Materials

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

Schedule (Tentative and Subject to Change):

COURSE SCHEDULE - SUBJECT TO REVISION

CENG 3434 Fall 2021

Lesson No.	Date	Topic	Lesson Material	Work Assigned	Assignment Due
		Week 1			
1	8/23	Material types, properties and standards for testing and design	Chapter 1	HW1 Assigned	
Lab 1	8/23	Section 001L: Aggregate: Moisture Content, Unit Weight, Sieve Analysis, Absorption	AGG-1, AGG-3, AGG-7	001L: Lab 1 Assigned	
2	8/25	Aggregates	2.1-2.3.3		
Lab 1	8/25	Section 002L: Aggregate: Moisture Content, Unit Weight, Sieve Analysis, Absorption	AGG-1, AGG-3, AGG-7	002L: Lab 1 Assigned	
3	8/27	Sampling techniques and particle size distribution	2.3.4		
		Week 2			
4	8/30	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5	HW2 Assigned	
Lab 2	8/30	Section 001L: Making Concrete: Batching, Mixing, Slump, Air, Cylinders	CON-1, CON-2, CON-3, CON-4	001L: Lab 2 Assigned	
5	9/1	Concrete and Cement - Cement Behavior and Composition	3.4.3 - 3.4.6		HW 1 Due, 001L: Lab 1 Due
Lab 2	9/1	Section 002L: Making Concrete: Batching, Mixing, Slump, Air, Cylinders	CON-1, CON-2, CON-3, CON-4	002L: Lab 2 Assigned	
	9/3	**CENSUS DATE**			
6	9/3	Properties of Good Concrete	3.5 -3 .7		002L: Lab 1 Due
		Week 3			
	9/6	**LABOR DAY**			
Lab 3	9/7	Sections 001L and 002L: 7 Day Concrete Strength Test (Signup for a time)	CON-3	001L and 002L: Lab 3 Assigned	
7	9/8	Concrete Properties - Field Testing and Curing	3.7 - 3.7.4		001L: Lab 2 Due
8	9/10	Properties of Hardened Concrete	3.8 - 3.8.5		002L: Lab 2 Due
		Week 4			
9	9/13	Concrete Properties - Creep and Shrinkage	3.8.6 - 3.9.4		
Lab 4	9/13	Section 001L: Lab Safety Training (no lab assignment)			
10	9/15	Concrete Mix Design	3.10	HW3 Assigned	001L and 002L: Lab 3 Due
Lab 4	9/15	Section 002L: Lab Safety Training (no lab assignment)			
11	9/17	Concrete Types, Chapter 19 IBC	3.11 - 3.13, IBC 19		
		Week 5			
12	9/20	Introduction to Steel	7-7.2	HW4 Assigned	HW2 Due
Lab 5	9/20	Sections 001L and 002L: Metal Tension Test (vdeo lab, will not meet in person)		001L and 002L: Lab 5 Assigned	
13	9/22	Steel Types and Properties	7.2-7.3		HW3 Due
14	9/24	Structural steel	7.4 - 7.4.1		
		Week 6			
15	9/27	Reinforcing Steel	7.5-7.7		
Lab 6	9/27	Sections 001L and 002L: 28 Day Compressive Strength of Cylinders (signup for time)	CON-3	001L and 002L: Lab 6 Assigned	
16	9/29	Laboratory Strength Tests of Steel	Cordon Book		001L and 002L: Lab 5 Due
17	10/1	Introduction to Masonry	4-4.1.3	HW5 Assigned	HW4 Due
		Week 7			
18	10/4	Properties and Size of Masonry Units	4.1.4-4.1.8		
Lab 7	10/4	Section 001L: Masonry Prisms and Absorption Testing	MAS-3, MAS-5	001L: Lab 7 Assigned	
	10/6	**EXAM 1 (In Class)**			001L and 002L: Lab 6 Due
Lab 7	10/6	Section 002L: Masonry Prisms and Absorption Testing	MAS-3, MAS-5	002L: Lab 7 Assigned	
19	10/8	Mortar and Grout	4.2-4.2.3, 4.2.4		
		Week 8			
20	10/11	Masonry Construction	4.3-1		
Lab 8	10/11	Sections 001L and 002L: Test Masonry Prisms	MAS-8	001L and 002L: Lab 8 Assigned	
21	10/13	Properties of Masonry	4.3-2-4.5		
22	10/15	Introduction to Timber	5.1-5.3.3	HW6 Assigned	HW5 Due
		Week 9			
23	10/18	Defects, Deterioration and Shrinkage of Wood	5.3.4-5.5.1		
Lab 9	10/18	Section 001L: Timber Lab: WOOD		001L: Lab 9 Assigned	
24	10/20	Classification of Wood for Construction	5.9-5.9.1		001L and 002L: Labs 7 and 8 due
Lab 9	10/20	Section 002L: Timber Lab: WOOD		002L: Lab 9 Assigned	
25	10/22	"What Happened?" Failure Modes of Wood	5.6-5.8.2		
		Week 10			
26	10/25	Wood Products	5.9.2, 5.10-5.10.2		
Lab 10	10/25	Section 001L: TBD			
27	10/27	Wood Construction and Load Path	5.10.3-5.12		001L: Lab 9 Due
Lab 10	10/27	Section 002L: TBD			
28	10/29	Wood Testing	Cordon, IBC 23		002L: Lab 9 Due
		Week 11			
29	11/1	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3		HW6 Due
Lab 11	11/1	Section 001L: Review Bridge Drawings and IBC 2 and 3		001L: Lab 11 Assigned	001L: Lab 11 Due
	11/1	**LAST DAY TO WITHDRAW FROM CLASSES**			
30	11/3	IBC Chapter 6: Construction Types	IBC Chapter 6	HW7 Assigned	
Lab 11	11/5	Section 002L: Review Bridge Drawings and IBC 2 and 3		002L: Lab 11 Assigned	002L: Lab 11 Due
31	11/5	IBC Chapter 5: General Building Height and Area	IBC Chapter 5		
		Week 12			
32	11/8	ASTM overview	Powerpoint		
Lab 12	11/8	Sections 001L and 002L: IBC 5 and 6 (will not meet in person)		001L and 002L: Lab 12 Assigned	
33	11/10	Asphalt types	6.2-6.4	HW8 Assigned	HW7 Due
	11/12	**EXAM 2 (In Class)**			
		Week 13			
34	11/15	Properties of Asphalt	6.4-6.5.3		
Lab 13	11/15	Section 001L: TBD		001L: Lab 13 Assigned	
35	11/17	HMA and Flexible vs. Rigid Pavements	IBC 10 (powerpoint)		
Lab 13	11/17	Section 002L: TBD		002L: Lab 13 Assigned	
36	11/19	IBC Chapter 10: Means of Egress	6.6-6.7.2	HW9 Assigned	001L and 002L Lab 12 Due, HW8 Due
		THANKSGIVING BREAK (11/23 - 11/27)			
		Week #14			
37	11/29	Plastics	Chapter 8		
Lab 14		**Sections 001L and 002L: NO LAB**			
38	12/1	TBA			001L: Lab 13 Due, HW9 Due
39	12/3	FE Review Video			002L: Lab 13 Due
		Week #15			
	12/6	**Dead Day**			
	12/8	**FINAL EXAM (Week of 12/6)**			

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 6th
Exam 2: November 12th
Final Exam: TBD Based on University Schedule (likely 12/8)

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 regular basis. **Homework is due by 10 am on the date provided on the Homework Assignment Schedule**. **Homework will be uploaded to canvas as a single word document (.doc or .docx) or pdf.** No late homework will be accepted except when arrangements are made with the instructor ahead of time. Solutions will be posted on Canvas. **Homework MUST be typed with the question in bold and the answer un-bolded below.** For example:

1. **List the three main components of concrete**
   Aggregate, water and cement

Laboratory:
There will be a series of labs completed during the semester. There are two sections of lab. If you are in section 001L we will meet for lab on Monday's from 2:30pm-5:15pm in RBS 1024. For section 002L 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 encourage 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

****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.

Professional Practice:
Your professional practice grade will be broken down into multiple components. 5 of the 10 percentage points will be based on your attendance at **3 ASCE student events** (the cookouts at the beginning and end of the semester do not count) throughout the fall semester. The remaining 5 percentage points is based upon the number of assignments you submit, the quality of your work and your participation in lab.

Final day to withdraw: The final day to withdraw from the course without penalty is **November 1st**.

Census dates: The university requires that instructors to report the attendance to the register at various points in the semester. Therefore, on **September 3rd** 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.

Recording of Class Sessions: Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

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 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. 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.
Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office 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 instructors 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 SafeAssignTM, 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

Prepared by: Michael V. Gangone, Ph.D.
Associate Professor
Department of Civil and Environmental Engineering

CE 3434 General Requirements for Laboratory Reports

Lab Time: Section 001L: Monday 2:30-5:15 pm RBS 1024 or Section 002L: Wednesday 2:30-5:15 pm RBS 1024

A laboratory report is required for each experiment performed. Only one lab report is required per group for most labs. There may however be certain labs that require each person to submit their own work. Due dates for each lab will be posted. Each group will need to submit one paper copy of the lab as well as upload a copy to Canvas. The report should be in the following format.

- **Cover Page:** Laboratory Title, Course Number (CENG 3434), Your Names and Group Number. Each person in the group sign the cover page indicting that they have read the report and approve of the contents contained within.
- **Objective:** Purpose of the experiment should be explained in a few sentences.
- **Procedure:** Include a summarized procedure of the steps you took to complete this lab. Numbered list is preferred.
- **Results and Discussion**: Present tabulated raw data (data sheets are provided with the standard laboratory procedure), relevant calculations, and required plots. **BE SURE TO USE CAPTIONS FOR FIGURES, TABLES AND GRAPHS! Refer to the figures, graphs and tables by number in the text of the discussion.** Partial credit can only be assigned if you present your work in a logical manner. Neatly show your work and attach a page of sample calculations.

  Try to have a good understanding of each experiment. Analyze your results. Identify probable sources of error that may have occurred while you performed the laboratory, and explain that how these errors might affect your results (final value will increase or decrease). DISCUSS!! For example, what trends do you notice in the data? Do the results make sense? Are they what you expected? If so why? If not, why not? Some labs will have more data than others to discuss. Be sure to give a thorough discussion of your results.
- **Conclusions:** Summarize your results. Relate what you have learned from class about materials, codes and specs to what you have learned from performing this lab. Explain that how this experiment is useful to solve the practical civil engineering problems.
- **Team Contributions:** The contributions of each team member should be stated in this section. List what portions of the report each person contributed towards and how much time each person spent. It is okay to have multiple people working on any part.

GRADING

Participation in Lab and Cleanup	20 %
Report	
• Objective	5 %
• Procedure	10%
• Results and Discussion	40 %
• Conclusions	25 %

Sign-in/Sign-out:
For each lab you will be required to sign in and out to receive the 20 percentage points for participation. You will not be allowed to sign out until the lab space is clean and all equipment has been returned to its appropriate place. We will be sharing this lab with another class this semester so it is important to keep the lab clean.

THINGS TO REMEMBER

- After finishing the experiments, clean the instruments and the work area.
- Data sheets should be typed in Excel
- Sample calculations can be typed or written neatly on engineering paper and placed as an appendix of the report. The remainder of the report should be typewritten.
- When writing your reports, avoid using first person like "I" or "we".
- **USE CAPTIONS FOR FIGURES AND TABLES! REFER TO THESE FIGURES AND TABLES SPECIFICALLY IN THE TEXT USING THE FIGURE/TABLE NUMBER!!**

Course Schedule:

COURSE SCHEDULE - SUBJECT TO REVISION CENG 3434 Fall 2021					
Lesson No.	**Date**	**Topic**	**Lesson Material**	**Work Assigned**	**Assignment Due**
		Week 1			
1	8/23	Material types, properties and standards for testing and design	Chapter 1	HW1 Assigned	
Lab 1	8/23	Section 001L: Aggregate: Moisture Content, Unit Weight, Sieve Analysis, Absorption	AGG-1, AGG-3, AGG-7	001L: Lab 1 Assigned	
2	8/25	Aggregates	2.1-2.3.3		
Lab 1	8/25	Section 002L: Aggregate: Moisture Content, Unit Weight, Sieve Analysis, Absorption	AGG-1, AGG-3, AGG-7	002L: Lab 1 Assigned	
3	8/27	Sampling techniques and particle size distribution	2.3.4		
		Week 2			
4	8/30	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5	HW2 Assigned	
Lab 2	8/30	Section 001L: Making Concrete: Batching, Mixing, Slump, Air, Cylinders	CON-1, CON-2, CON-3, CON-4	001L: Lab 2 Assigned	
5	9/1	Concrete and Cement - Cement Behavior and Composition	3.4.3 - 3.4.6		HW 1 Due, 001L: Lab 1 Due
Lab 2	9/1	Section 002L: Making Concrete: Batching, Mixing, Slump, Air, Cylinders	CON-1, CON-2, CON-3, CON-4	002L: Lab 2 Assigned	
	9/3	**CENSUS DATE**			
6	9/3	Properties of Good Concrete	3.5 -3 .7		002L: Lab 1 Due
		Week 3			
	9/6	**LABOR DAY**			
Lab 3	9/7	Sections 001L and 002L: 7 Day Concrete Strength Test (Signup for a time)	CON-3	001L and 002L: Lab 3 Assigned	
7	9/8	Concrete Properties - Field Testing and Curing	3.7 - 3.7.4		001L: Lab 2 Due
8	9/10	Properties of Hardened Concrete	3.8 - 3.8.5		002L: Lab 2 Due
		Week 4			
9	9/13	Concrete Properties - Creep and Shrinkage	3.8.6 - 3.9.4		
Lab 4	9/13	Section 001L: Lab Safety Training (no lab assignment)			
10	9/15	Concrete Mix Design	3.10	HW3 Assigned	001L and 002L: Lab 3 Due
Lab 4	9/15	Section 002L: Lab Safety Training (no lab assignment)			
11	9/17	Concrete Types, Chapter 19 IBC	3.11 - 3.13, IBC 19		
		Week 5			
12	9/20	Introduction to Steel	7-7.2	HW4 Assigned	HW2 Due
Lab 5	9/20	Sections 001L and 002L: Metal Tension Test (video lab, will not meet in person)		001L and 002L: Lab 5 Assigned	
13	9/22	Steel Types and Properties	7.2-7.3		HW3 Due
14	9/24	Structural steel	7.4 - 7.4.1		
		Week 6			
15	9/27	Reinforcing Steel	7.5-7.7		
Lab 6	9/27	Sections 001L and 002L: 28 Day Compressive Strength of Cylinders (signup for time)	CON-3	001L and 002L: Lab 6 Assigned	
16	9/29	Laboratory Strength Tests of Steel	Cordon Book		001L and 002L: Lab 5 Due
17	10/1	Introduction to Masonry	4-4.1.3	HW5 Assigned	HW4 Due
		Week 7			
18	10/4	Properties and Size of Masonry Units	4.1.4-4.1.8		
Lab 7	10/4	Section 001L: Masonry Prisms and Absorption Testing	MAS-3, MAS-5	001L: Lab 7 Assigned	
	10/6	**EXAM 1 (In Class)**			001L and 002L: Lab 6 Due
Lab 7	10/6	Section 002L: Masonry Prisms and Absorption Testing	MAS-3, MAS-5	002L: Lab 7 Assigned	
19	10/8	Mortar and Grout	4.2-4.2.3, 4.2.4		
		Week 8			
20	10/11	Masonry Construction	4.3-1		
Lab 8	10/11	Sections 001L and 002L: Test Masonry Prisms	MAS-8	001L and 002L: Lab 8 Assigned	
21	10/13	Properties of Masonry	4.3-2-4.5		
22	10/15	Introduction to Timber	5.1-5.3.3	HW6 Assigned	HW5 Due
		Week 9			
23	10/18	Defects, Deterioration and Shrinkage of Wood	5.3.4-5.5.1		
Lab 9	10/18	Section 001L: Timber Lab: WOOD		001L: Lab 9 Assigned	
24	10/20	Classification of Wood for Construction	5.9-5.9.1		001L and 002L: Labs 7 and 8 due
Lab 9	10/20	Section 002L: Timber Lab: WOOD		002L: Lab 9 Assigned	
25	10/22	"What Happened?" Failure Modes of Wood	5.6-5.8.2		
		Week 10			
26	10/25	Wood Products	5.9.2, 5.10-5.10.2		
Lab 10	10/25	Section 001L: TBD			
27	10/27	Wood Construction and Load Path	5.10.3-5.12		001L: Lab 9 Due
Lab 10	10/27	Section 002L: TBD			
28	10/29	Wood Testing	Cordon, IBC 23		002L: Lab 9 Due
		Week 11			
29	11/1	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3		HW6 Due
Lab 11	11/1	Section 001L: Review Bridge Drawings and IBC 2 and 3		001L: Lab 11 Assigned	001L: Lab 11 Due
	11/1	**LAST DAY TO WITHDRAW FROM CLASSES**			
30	11/3	IBC Chapter 6: Construction Types	IBC Chapter 6	HW7 Assigned	
Lab 11	11/5	Section 002L: Review Bridge Drawings and IBC 2 and 3		002L: Lab 11 Assigned	002L: Lab 11 Due
31	11/5	IBC Chapter 5: General Buliding Height and Area	IBC Chapter 5		
		Week 12			
32	11/8	ASTM overview	Powerpoint		
Lab 12	11/8	Sections 001L and 002L: IBC 5 and 6 (will not meet in person)		001L and 002L: Lab 12 Assigned	
33	11/10	Asphalt types	6.2-6.4	HW8 Assigned	HW7 Due
	11/12	**EXAM 2 (In Class)**			
		Week 13			
34	11/15	Properties of Asphalt	6.4-6.5.3		
Lab 13	11/15	Section 001L: TBD		001L: Lab 13 Assigned	
35	11/17	HMA and Flexible vs. Rigid Pavements	IBC 10 (powerpoint)		
Lab 13	11/17	Section 002L: TBD		002L: Lab 13 Assigned	
36	11/19	IBC Chapter 10: Means of Egress	6.6-6.7.2	HW9 Assigned	001L and 002L Lab 12 Due, HW8 Due
		THANKSGIVING BREAK (11/23 - 11/27)			
		Week #14			
37	11/29	Plastics	Chapter 8		
Lab 14		**Sections 001L and 002L: NO LAB**			
38	12/1	TBA			001L: Lab 13 Due, HW9 Due
39	12/3	FE Review Video			002L: Lab 13 Due
		Week #15			
	12/6	**Dead Day**			
	12/8	**FINAL EXAM (Week of 12/6)**			

Laboratory Schedule:

LAB SCHEDULE - SUBJECT TO REVISION				
CENG 3434 Fall 2021 RBS 1024				
Lab Week No.	**Date**	**Topic**	**LABS FROM SOMAYAJI TEXT**	**Assignment Due (by 3pm)**
		Week 1		
Lab 1		Aggregate: Moisture Content, Unit Weight, Sieve Analysis, Absorption	AGG-1, AGG-3, AGG-7	
	8/23	Section 001L		September 1, 2021
	8/25	Section 002L		September 3, 2021
		Week 2		
Lab 2		Making Concrete: Batching, Mixing, Slump, Air, Cylinders	CON-1, CON-2, CON-3, CON-4	
	8/30	Section 001L		September 8, 2021
	9/1	Section 002L		September 10, 2021
		Week 3		
Lab 3		7 Day Concrete Strength Test	CON-3	
	9/7	Sections 001L and 002L (sign up for time)		September 15, 2021
		Week 4		
Lab 4	9/13	Section 001L: Lab Safety Training (no lab assignment)		
	9/15	Section 002L: Lab Safety Training (no lab assignment)		
		Week 5		
Lab 5		Metal Tension Test (Video Demonstration, will not meet in person)		
	9/20	Section 001L and 002L		September 29, 2021
		Week 6		
Lab 6		28 Day Compressive Strength of Cylinders	CON-3	
	9/27	Sections 001L and 002L (sign up for time)		October 6, 2021
		Week 7		
Lab 7		Masonry Prisms and Absorption Testing	MAS-3, MAS-5	
	10/4	Section 001L		October 20, 2021
	10/6	Section 002L		October 20, 2021
		Week 8		
Lab 8		Test Masonry Prisms	MAS-8	
	10/11	Sections 001L and 002L (sign up for time)		October 20, 2021
		Week 9		
Lab 9		Timber Lab: WOOD		
	10/18	Section 001L		October 27, 2021
	10/20	Section 002L		October 29, 2021
		Week 10		
Lab 10		TBD		
	10/25	Section 001L		
	10/27	Section 002L		
		Week 11		
Lab 11		Review Bridge Drawings and IBC 2 and 3		
	11/1	Section 001L		November 1, 2021
	11/5	Section 002L		November 5, 2021
		Week 12		
Lab 12		IBC 5 and 6 (will not meet in person for lab)		
	11/8	Sections 001L and 002L		November 19, 2021
		Week 13		
Lab 13		TBD		
	11/15	Section 001L		December 1, 2021
	11/17	Section 002L		December 3, 2021
		Week #14		
Lab 14		**Sections 001L and 002L: NO LAB**		

NOTES Section 001L: Monday Lab Section

Section 002L: Wednesday Lab Section

Lab 7 and 8 will be combined into one lab report

Homework and Exam Schedule:

HOMEWORK AND EXAM SCHEDULE - SUBJECT TO REVISION

CENG 3434 Fall 2021

Homework No.	Topic	Homework Assigned	Assignment Due
1	Review of Mechanics of Materials, Aggregates	August 23, 2021	September 1, 2021
2	Cement and Concrete	August 30, 2021	September 20, 2021
3	Concrete Mix Design (group homework)	September 15, 2021	September 22, 2021
4	Steel	September 20, 2021	October 1, 2021
5	Masonry	October 1, 2021	October 15, 2021
6	Timber	October 15, 2021	November 1, 2021
7	IBC Chapters 5 and 6	November 3, 2021	November 10, 2021
8	Asphalt	November 10, 2021	November 19, 2021
9	IBC Chapter 10	November 19, 2021	December 1, 2021

Exam No.	Material Covered	Date
1	Lessons 1-16, Homework 1-4	October 6, 2021
2	Lessons 16-31, Homework 5-7	November 12, 2021
Final	Comprehensive (entire course)	December 8, 2021

Quiz Schedule:

COURSE SCHEDULE - SUBJECT TO REVISION				
CENG 3434 Fall 2021				
Lesson No.	**Date**	**Topic**	**Date Assigned**	**Date Due (by 10 am)**
		Week 1		
1	8/23	Material types, properties and standards for testing and design	August 23, 2021	August 25, 2021
2	8/25	Aggregates	August 25, 2021	August 27, 2021
3	8/27	Sampling techniques and particle size distribution	August 27, 2021	August 30, 2021
		Week 2		
4	8/30	Concrete and Cement - Part 1	August 30, 2021	September 1, 2021
5	9/1	Concrete and Cement - Cement Behavior and Composition	September 1, 2021	September 3, 2021
6	9/3	Properties of Good Concrete	September 3, 2021	September 8, 2021
		Week 3		
7	9/8	Concrete Properties - Field Testing and Curing	September 8, 2021	September 10, 2021
8	9/10	Properties of Hardened Concrete	September 10, 2021	September 13, 2021
		Week 4		
9	9/13	Concrete Properties - Creep and Shrinkage	September 13, 2021	September 15, 2021
10	9/15	Concrete Mix Design	September 15, 2021	September 17, 2021
11	9/17	Concrete Types, Chapter 19 IBC	September 17, 2021	September 20, 2021
		Week 5		
12	9/20	Introduction to Steel	September 20, 2021	September 22, 2021
13	9/22	Steel Types and Properties	September 22, 2021	September 24, 2021
14	9/24	Structural steel	September 24, 2021	September 27, 2021
		Week 6		
15	9/27	Reinforcing Steel	September 27, 2021	September 29, 2021
16	9/29	Laboratory Strength Tests of Steel	September 29, 2021	October 1, 2021
17	10/1	Introduction to Masonry	October 1, 2021	October 4, 2021
		Week 7		
18	10/4	Properties and Size of Masonry Units	October 4, 2021	October 8, 2021
	10/6	**EXAM 1 (In Class)**	**NO QUIZ**	
19	10/8	Mortar and Grout	October 8, 2021	October 11, 2021
		Week 8		
20	10/11	Masonry Construction	October 11, 2021	October 13, 2021
21	10/13	Properties of Masonry	October 13, 2021	October 15, 2021
22	10/15	Introduction to Timber	October 15, 2021	October 18, 2021
		Week 9		
23	10/18	Defects, Deterioration and Shrinkage of Wood	October 18, 2021	October 20, 2021
24	10/20	Classification of Wood for Construction	October 20, 2021	October 22, 2021
25	10/22	"What Happened?" Failure Modes of Wood	October 22, 2021	October 25, 2021
		Week 10		
26	10/25	Wood Products	October 25, 2021	October 27, 2021
27	10/27	Wood Construction and Load Path	October 27, 2021	October 29, 2021
28	10/29	Wood Testing	October 29, 2021	November 1, 2021
		Week 11		
29	11/1	IBC Chapters 2 and 3: Occupancy Classification	November 1, 2021	November 1, 2021
30	11/3	IBC Chapter 6: Construction Types	November 3, 2021	November 5, 2021
31	11/5	IBC Chapter 5: General Buliding Height and Area	November 5, 2021	November 8, 2021
		Week 12		
32	11/8	ASTM overview	November 8, 2021	November 10, 2021
33	11/10	Asphalt types	November 10, 2021	November 12, 2021
	11/12	**EXAM 2 (In Class)**	**NO QUIZ**	
		Week 13		
34	11/15	Properties of Asphalt	November 15, 2021	November 17, 2021
35	11/17	HMA and Flexible vs. Rigid Pavements	November 17, 2021	November 19, 2021
36	11/19	IBC Chapter 10: Means of Egress	November 19, 2021	November 29, 2021
		Week #14		
37	11/29	Plastics	November 29, 2021	December 1, 2021
38	12/1	TBA	**NO QUIZ**	
39	12/3	FE Review Video	**NO QUIZ**	
		Week #15		
	12/6	**Dead Day**		
	12/8	**FINAL EXAM (Week of 12/6)**		