

University of Texas at Tyler - Department of Civil Engineering
CENG 3434 Civil Engineering Materials, Codes and Specifications
Summer 1 - 2020

Instructor:	Dr. Michael Gangone RBS 1009 (903) 565-5872 mgangone@uttyler.edu	Office Hours: by appointment
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Lectures:

Lectures for this course will be completely online. The course is set up so that the lecture components will (typically) be Monday/Wednesday/Friday. The videos are posted on the course Canvas site. Each lecture will have a short quiz corresponding to that lecture material.

Laboratory:

Labs for this course will be done on your own. The labs will consist of hands on experiments as well as some paper labs. You have been provided a laboratory kit for the hands on experiments. Tuesday and Thursday of each week (except week 1) are set aside for you to complete the labs.

Course Website:

This course will be taught completely online for both the laboratory and lecture part of the class. Canvas will be used to manage the course material. There you will find homework assignments, solutions, handouts, lesson videos, laboratory assignments, lecture quizzes, exams and other material pertaining to the class. Canvas announcements will be used throughout the semester to relay information as needed. **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.

Prerequisites:

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 Summer 1 2020 (ONLINE)					
Lesson No.	Date	Topic	Lesson Material	Homework Assigned	Assignment Due
Week 1 (June 1 - June 5)					
1	6/1	Material types, properties and standards for testing and design	Chapter 1	HW 1 Assigned	
2	6/1	Aggregates	2.1-2.3.3		
3	6/1	Sampling techniques and particle size distribution	2.3.4		
4	6/2	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5	HW 2 Assigned	
5	6/2	Concrete and Cement - Cement Behavior and Composition	3.4.3 - 3.4.6		
6	6/2	Properties of Good Concrete	3.5 - 3.7		
7	6/3	Concrete Properties - Field Testing and Curing	3.7 - 3.7.4		
8	6/3	Properties of Hardened Concrete	3.8 - 3.8.5		
9	6/3	Concrete Properties - Creep and Shrinkage	3.8.6 - 3.9.4		
LAB 1: Aggregates					
11	6/5	Concrete Types, Chapter 19 IBC	3.11 - 3.13, IBC 19		HW 1 Due
10	6/5	Concrete Mix Design	3.10	HW 3 Assigned	
Week 2 (June 8 - June 12)					
12	6/8	Introduction to Steel	7-7.2	HW 4 Assigned	HW 2 Due
13	6/8	Steel Types and Properties	7.2-7.3		
14	6/8	Structural steel	7.4 - 7.4.1		
LAB 2: Concrete Mixing and Field Tests					
15	6/10	Reinforcing Steel	7.5-7.7		HW 3 Due
16	6/10	Laboratory Strength Tests of Steel	Cordon Book		
17	6/10	Introduction to Masonry	4-4.1.3	HW 5 Assigned	
LAB 3: Concrete Beam Construction					
18	6/12	Properties and Size of Masonry Units	4.1.4-4.1.8		HW 4 Due
19	6/12	Mortar and Grout	4.2-4.2.3, 4.2.4		
20	6/12	Masonry Construction	4.3-1		
Week 3 (June 15 - June 19)					
EXAM 1 (Lessons 1-16)					
21	6/15	Properties of Masonry	4.3-2-4.5		
22	6/15	Introduction to Timber	5.1-5.3.3	HW 6 Assigned	
LAB 4: Tension Test of Metals					
23	6/17	Defects, Deterioration and Shrinkage of Wood	5.3.4-5.5.1		HW 5 Due
25	6/17	"What Happened?": Failure Modes of Wood	5.6-5.8.2		
24	6/17	Classification of Wood for Construction	5.9-5.9.1		
LAB 5: Masonry Absorption Test and Prism Construction					
26	6/19	Wood Products	5.9.2, 5.10-5.10.2		
27	6/19	Wood Construction and Load Path	5.10.3-5.12		
28	6/19	Wood Testing	Cordon, IBC 23		
Week 4 (June 22 - June 26)					
29	6/22	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3		HW 6 Due
30	6/22	IBC Chapter 6: Construction Types	IBC Chapter 6	HW 7 Assigned	
31	6/22	IBC Chapter 5: General Building Height and Area	IBC Chapter 5		
LAB 6: Timber Lab					
32	6/24	ASTM overview	Powerpoint		
33	6/24	Asphalt types	6.2-6.4	HW 8 Assigned	
34	6/24	Properties of Asphalt	6.4-6.5.3		
LAB 7: Concrete Cylinder Test					
36	6/26	IBC Chapter 10: Means of Egress	IBC Chapter 10 (PPT)	HW 9 Assigned	HW 7 Due
35	6/26	HMA and Flexible vs. Rigid Pavements	6.6-6.7.2		
Week 5 (June 29 - July 3)					
EXAM 2 (Lessons 17-31)					
37	6/29	Plastics	Chapter 8		
LAB 8: IBC Chapters 2,3,5, 6 Lab					
38	7/1	Materials Review Video			HW 8 Due
LAB 9: Review of Structural Drawings					
FINAL EXAM (Comprehensive)					

Exams:

There will be 2 midterm examinations and one final examination. The exams are **TENTATIVELY** scheduled for:

Exam 1: June 15th

Exam 2: June 29th

Final Exam: July 3rd

All exams will be schedule for 8 am on the day they are assigned. The exams will be administered online. You will be required to download, print, take the exam, scan and upload back to Canvas. Therefore, on the day of the midterm exams (exams 1 and 2), the exam will post at 8 am and will need to be uploaded by 9:15 am that day. The exams are designed for 55 minutes. This will give

you 55 minutes for the exam plus an additional 20 minutes to download, print, scan and upload back to Canvas. The window will close exactly at 9:15 am. Any exams not uploaded by that time will receive an automatic grade of 0. 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. Below is exam schedule and the material covered on each exam.

Exam No.	Material Covered	Date
1	Lessons 1-16, Homework 1-4	June 15, 2020
2	Lessons 16-31, Homework 5-7	June 29, 2020
Final	Comprehensive (entire course)	July 3, 2020

Homework:

Homework will be assigned on regular basis. **Homework is due by 3 pm the assigned due date.** No late homework will be accepted except when arrangements are made with the instructor ahead of time. Solutions will be posted on Canvas. You have been provided the word document file with questions already typed. You may download the file and complete your answer below each question. Homework MUST be typed with the question in **bold** and the answer un-bolded below. For example:

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

Below is a schedule of the homework assignments, when they are assigned and when they are due:

HOMWORK SCHEDULE - SUBJECT TO REVISION			
CENG 3434 Summer 1 2020			
Homework No.	Topic	Homework Assigned	Assignment Due
1	Review of Mechanics of Materials, Aggregates	June 1, 2020	June 5, 2020
2	Concrete	June 2, 2020	June 8, 2020
3	Concrete Mix Design	June 5, 2020	June 10, 2020
4	Steel	June 8, 2020	June 12, 2020
5	Masonry	June 10, 2020	June 17, 2020
6	Timber	June 15, 2020	June 22, 2020
7	IBC Chapters 5 and 6	June 22, 2020	June 26, 2020
8	Asphalt	June 24, 2020	June 30, 2020
9	IBC Chapter 10	June 26, 2020	July 1, 2020

Laboratory:

Since this entire class will be online, you will complete the labs for this class at home. The labs will be a combination of hands on experiments as well as some paper labs. Each of you are provided a lab kit that contains materials that you will need for the hands on labs. You will also need to purchase some other items to use as equipment that have not been provided to you as part of the kit. They include a digital kitchen scale (up to 7 lbs. capacity), a bucket, scoop, ruler, safety

classes, gloves, etc. Safety is always important. Be safe in performing these labs. Each laboratory assignment will require you to complete a memo outlining your results. The memo format is provided at the end of this syllabus. A schedule of the laboratory assignments are posted below along with their due dates.

LAB SCHEDULE - SUBJECT TO REVISION				
CENG 3434 Summer 2020				
Lab Week No.	Date	Topic	LABS FROM SOMAYAJI TEXT	Assignment Due (by 3pm)
Week 1 (June 1- June 5)				
Lab 1	6/4	LAB 1: Aggregates	AGG-1, AGG-3, AGG-7	June 11, 2020
Week 2 (June 8 - June 12)				
Lab 2	6/9	LAB 2: Concrete Mixing and Field Tests	CON-1, CON-2, CON-3, CON-4	June 16, 2020
Lab 3	6/11	LAB 3: Concrete Beam Construction		June 18, 2020
Week 3 (June 15 - June 19)				
Lab 4	6/16	LAB 4: Tension Test of Metals		June 23, 2020
Lab 5	6/18	LAB 5: Masonry Absorption Test and Prism Construction	MAS-3, MAS-5	June 25, 2020
Week 4 (June 22 - June 26)				
Lab 6	6/23	LAB 6: Timber Lab	WOOD-2, WOOD-3, WOOD-4	June 30, 2020
Lab 7	6/25	LAB 7: Concrete Cylinder Test	CON-3	July 2, 2020
Week 5 (June 29 - July 3)				
Lab 8	6/30	LAB 8: IBC Chapters 2,3 5, 6 Lab		July 3, 2020
Lab 9	7/2	LAB 9: Review of Structural Drawings		July 2, 2020

Grades:

- Homework = 10%
- Online Quizzes = 15%
- Professional Practice = 5%
- Midterm Exams (2) = 25%
- Final Exam = 20%
- Labs= 25%

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.

Professional Practice:

Professional Practice grade will consist of 5% of your overall grade. This grade will be based on the number of assignments you submit and the professionalism in which you submit your work.

Quizzes:

Each lecture will have a corresponding quiz associated with the material from that lecture. The quiz for that lecture will be due by 9 am of the following lecture day. A quiz schedule for each lecture is provided below:

COURSE SCHEDULE - SUBJECT TO REVISION					
CENG 3434 Summer 1 2020 (ONLINE)					
Lesson No.	Date	Topic	Lesson Material	Quiz Assigned	Quiz Due (9 am)
Week 1 (June 1 - June 5)					
1	6/1	Material types, properties and standards for testing and design	Chapter 1	June 1, 2020	June 2, 2020
2	6/1	Aggregates	2.1-2.3.3	June 1, 2020	June 2, 2020
3	6/1	Sampling techniques and particle size distribution	2.3.4	June 1, 2020	June 2, 2020
4	6/2	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5	June 2, 2020	June 3, 2020
5	6/2	Concrete and Cement - Cement Behavior and Composition	3.4.3 - 3.4.6	June 2, 2020	June 3, 2020
6	6/2	Properties of Good Concrete	3.5 - 3.7	June 2, 2020	June 3, 2020
7	6/3	Concrete Properties - Field Testing and Curing	3.7 - 3.7.4	June 3, 2020	June 5, 2020
8	6/3	Properties of Hardened Concrete	3.8 - 3.8.5	June 3, 2020	June 5, 2020
9	6/3	Concrete Properties - Creep and Shrinkage	3.8.6 - 3.9.4	June 3, 2020	June 5, 2020
11	6/5	Concrete Types, Chapter 19 IBC	3.11 - 3.13, IBC 19	June 5, 2020	June 8, 2020
10	6/5	Concrete Mix Design	3.10	June 5, 2020	June 8, 2020
Week 2 (June 8 - June 12)					
12	6/8	Introduction to Steel	7-7.2	June 8, 2020	June 10, 2020
13	6/8	Steel Types and Properties	7.2-7.3	June 8, 2020	June 10, 2020
14	6/8	Structural steel	7.4 - 7.4.1	June 8, 2020	June 10, 2020
15	6/10	Reinforcing Steel	7.5-7.7	June 10, 2020	June 12, 2020
16	6/10	Laboratory Strength Tests of Steel	Cordon Book	June 10, 2020	June 12, 2020
17	6/10	Introduction to Masonry	4-4.1.3	June 10, 2020	June 12, 2020
18	6/12	Properties and Size of Masonry Units	4.1.4-4.1.8	June 12, 2020	June 15, 2020
19	6/12	Mortar and Grout	4.2-4.2.3, 4.2.4	June 12, 2020	June 15, 2020
20	6/12	Masonry Construction	4.3-1	June 12, 2020	June 15, 2020
Week 3 (June 15 - June 19)					
21	6/15	Properties of Masonry	4.3-2-4.5	June 15, 2020	June 17, 2020
22	6/15	Introduction to Timber	5.1-5.3.3	June 15, 2020	June 17, 2020
23	6/17	Defects, Deterioration and Shrinkage of Wood	5.3.4-5.5.1	June 17, 2020	June 19, 2020
25	6/17	"What Happened?" Failure Modes of Wood	5.6-5.8.2	June 17, 2020	June 19, 2020
24	6/17	Classification of Wood for Construction	5.9-5.9.1	June 17, 2020	June 19, 2020
26	6/19	Wood Products	5.9.2, 5.10-5.10.2	June 19, 2020	June 22, 2020
27	6/19	Wood Construction and Load Path	5.10.3-5.12	June 19, 2020	June 22, 2020
28	6/19	Wood Testing		June 19, 2020	June 22, 2020
Week 4 (June 22- June 26)					
29	6/22	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3	June 22, 2020	June 24, 2020
30	6/22	IBC Chapter 6: Construction Types	IBC Chapter 6	June 22, 2020	June 24, 2020
31	6/22	IBC Chapter 5: General Building Height and Area	IBC Chapter 5	June 22, 2020	June 24, 2020
32	6/24	ASTM overview	Powerpoint	June 24, 2020	June 26, 2020
33	6/24	Asphalt types	6.2-6.4	June 24, 2020	June 26, 2020
34	6/24	Properties of Asphalt	6.4-6.5.3	June 24, 2020	June 26, 2020
36	6/26	IBC Chapter 10: Means of Egress	IBC Chapter 10 (PPT)	June 26, 2020	June 29, 2020
35	6/26	HMA and Flexible vs. Rigid Pavements	6.6-6.7.2	June 26, 2020	June 29, 2020
Week 5 (June 29 - July 3)					
37	6/29	Plastics	Chapter 8	June 29, 2020	July 1, 2020
38	7/1	Materials Review Video		No quiz	No quiz

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 **June 23rd**

Census dates: The university requires that instructors to report the attendance to the register at various points in the semester. Therefore, on **June 4th** 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.

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 SafeAssign™, available on Canvas. UT Tyler Resources for Students
 - [UT Tyler Writing Center](http://writingcenter@uttyler.edu) (903.565.5995), writingcenter@uttyler.edu
 - [UT Tyler Tutoring Center](mailto:tutoring@uttyler.edu) (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](http://903.566.7254) (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: Online

A laboratory report memo is required for each experiment performed. Due dates for each lab are provided earlier in the syllabus. The memo is to be uploaded to canvas as either a word document or a pdf. Below is additional information about the memo. This format is provided by Dr. Gokhan Saygili as this is the memo format he uses for his classes. I have elected to adopt the same format for this course.

Lab Write-up: Your lab reports this semester represent a preliminary report that would be submitted to the design engineer (the instructor in this case) following completion of an actual lab experiment. These preliminary reports are not intended to be comprehensive and/or lengthy. On the other hand, you should still include the pertinent points. The goal is to briefly describe the experiment, to describe the test results, recognize points of weakness on the test (did something go wrong) and then make recommendations on subsequent tests, and to discuss potential uses of the results. The results should be in memorandum format (similar to this handout). A sample skeleton of the memorandum is attached.

Tips for report write-up:

In most cases the report write-up (memorandum should be no more than three pages (excluding enclosures). Memos must be signed!

Actual results should be summarized early on in the memo.

Pictures can be taken presented as enclosures.

The explanation of the laboratory test is not to tell me all of the steps involved as listed in the lab manual, but rather the specific steps, numbers, measurements, etc. that YOU actually did.

Use tables to organize the numerical information obtained from the lab. Tables should have column and row headings.

Figures should include chart titles, axis titles, appropriate axis location, range, and decimal points, legend, gridlines as appropriate, proper font size, labels, etc...

Pay particular attention to the purpose of the test. This area will indicate whether or not you understand why the tests are being done at all.

Don't forget to assess your laboratory experience. You need to identify potential sources of weakness, and suggest what you would do differently if you were to perform the same test again.

In some instances, data sheets/tables will be given to you. These should be submitted as enclosures.

Enclosures should be placed in order of importance...

I believe that by following this memo format, you will be able to put together your lab write-ups in an efficient manner, with a professional result.

Good luck this semester!

ENCLOSURES

Sample Memo Skeleton

DATE: January 12, 2016
TO: Dr. Saygili, CENG 3336 Course Instructor
FROM: {Your name here}
SUBJECT: Preliminary Report 1, {name of lab}

1. On {date} we performed {type of test(s)} on {soil type(s), if known, be specific} to determine {purpose}. The results indicate {state test results}. Key parameters from the test are shown in the following table/figure.

TABLE(s) or FIGURE(s)

2. *Brief* explanation of laboratory test and procedure
3. Discussion of potential sources of error and/or explanation of things that may have affected the results
4. Discussion of the test results
5. Recommendations/discussion of potential use

ENCLOSURES

[signature]

{Graphs}

{Data Sheets}

{Sample Calculations}

Etc...

January 12, 2016

MEMORANDUM FOR Dr. Saygili, Instructor of CENG 3336 Lab

SUBJECT: Results of Laboratory 1, Soil Classification

1. Purpose. The purpose of this memorandum is to inform you of the classification of the soil tested in the laboratory on January 12, 2013. This soil was obtained from power pole excavation here on UT-Tyler campus. These interim report findings identify the type of soil assigned to our lab group during lab class.

2. Results. The soil gradation curve is shown as enclosure No. 1. This soil has a coefficient of gradation, $C_c = 1.24$, and a coefficient of uniformity of 3.21. The soil is identified as being poorly graded. See enclosures 1-4 for supporting calculations, appropriate forms, and the soil gradation curve. Enclosure No. 2 shows the results of our soil gradation curve compared to the results of the other groups.

3. Discussion.
 - a. Brief Explanation of Test. This laboratory experiment was conducted using soil sample #3, in the lab. The experiment was conducted using Sieve No. 4, 10, 20, 40, 60, 80, 120, and 200.

 - b. Reasonableness of Results. The laboratory classification is reasonable because visual inspection of the soil suggested it was granular in nature with some fines. The soil gradation curve demonstrates a smooth line indicative of a natural soil.

 - c. Possible Sources of Error. During the sieve shake portion of the procedure, the stack of sieves came loose from the machine and fell to the floor. Most of the soil was recovered, and the test was resumed. Our group observed that many of the clay particles were so hard, that they did not break up. We attempted to break down the soil prior to the test, but may have overlooked some of the particles. Finally, the instructor insisted on telling boring stories that interrupted our train of thought. These obstacles would be overcome by securing the sieves better before running the test and spending more time breaking down the hardened clay clumps. There is nothing that can be done about the instructor.

 - d. In a subsequent lab we will run a hydrometer test on the fines to further analyze that portion of the gradation curve. We will also run a liquid limit and plastic limit test on the fines to quantify the plasticity of the soil. At that time, we will be able to perform an actual soil classification of this soil.

ENCLOSURES

Gradation Curve

Class Composite Gradation Curves

Raw Data

Course Schedule:

COURSE SCHEDULE - SUBJECT TO REVISION					
CENG 3434 Summer 1 2020 (ONLINE)					
Lesson No.	Date	Topic	Lesson Material	Homework Assigned	Assignment Due
Week 1 (June 1 - June 5)					
1	6/1	Material types, properties and standards for testing and design	Chapter 1	HW 1 Assigned	
2	6/1	Aggregates	2.1-2.3.3		
3	6/1	Sampling techniques and particle size distribution	2.3.4		
4	6/2	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5	HW 2 Assigned	
5	6/2	Concrete and Cement - Cement Behavior and Composition	3.4.3 - 3.4.6		
6	6/2	Properties of Good Concrete	3.5 - 3.7		
7	6/3	Concrete Properties - Field Testing and Curing	3.7 - 3.7.4		
8	6/3	Properties of Hardened Concrete	3.8 - 3.8.5		
9	6/3	Concrete Properties - Creep and Shrinkage	3.8.6 - 3.9.4		
	6/4	LAB 1: Aggregates			
11	6/5	Concrete Types, Chapter 19 IBC	3.11 - 3.13, IBC 19		HW 1 Due
10	6/5	Concrete Mix Design	3.10	HW 3 Assigned	
Week 2 (June 8 - June 12)					
12	6/8	Introduction to Steel	7-7.2	HW 4 Assigned	HW 2 Due
13	6/8	Steel Types and Properties	7.2-7.3		
14	6/8	Structural steel	7.4 - 7.4.1		
	6/9	LAB 2: Concrete Mixing and Field Tests			
15	6/10	Reinforcing Steel	7.5-7.7		HW 3 Due
16	6/10	Laboratory Strength Tests of Steel	Cordon Book		
17	6/10	Introduction to Masonry	4-4.1.3	HW 5 Assigned	
	6/11	LAB 3: Concrete Beam Construction			
18	6/12	Properties and Size of Masonry Units	4.1.4-4.1.8		HW 4 Due
19	6/12	Mortar and Grout	4.2-4.2.3, 4.2.4		
20	6/12	Masonry Construction	4.3-1		
Week 3 (June 15 - June 19)					
	6/15	EXAM 1 (Lessons 1-16)			
21	6/15	Properties of Masonry	4.3-2-4.5		
22	6/15	Introduction to Timber	5.1-5.3.3	HW 6 Assigned	
	6/16	LAB 4: Tension Test of Metals			
23	6/17	Defects, Deterioration and Shrinkage of Wood	5.3.4-5.5.1		HW 5 Due
25	6/17	"What Happened?" Failure Modes of Wood	5.6-5.8.2		
24	6/17	Classification of Wood for Construction	5.9-5.9.1		
	6/18	LAB 5: Masonry Absorption Test and Prism Construction			
26	6/19	Wood Products	5.9.2, 5.10-5.10.2		
27	6/19	Wood Construction and Load Path	5.10.3-5.12		
28	6/19	Wood Testing	Cordon, IBC 23		
Week 4 (June 22- June 26)					
29	6/22	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3		HW 6 Due
30	6/22	IBC Chapter 6: Construction Types	IBC Chapter 6	HW 7 Assigned	
31	6/22	IBC Chapter 5: General Building Height and Area	IBC Chapter 5		
	6/23	LAB 6: Timber Lab			
32	6/24	ASTM overview	Powerpoint		
33	6/24	Asphalt types	6.2-6.4	HW 8 Assigned	
34	6/24	Properties of Asphalt	6.4-6.5.3		
	6/25	LAB 7: Concrete Cylinder Test			
36	6/26	IBC Chapter 10: Means of Egress	IBC Chapter 10 (PPT)	HW 9 Assigned	HW 7 Due
35	6/26	HMA and Flexible vs. Rigid Pavements	6.6-6.7.2		
Week 5 (June 29 - July 3)					
	6/29	EXAM 2 (Lessons 17-31)			
37	6/29	Plastics	Chapter 8		
	6/30	LAB 8: IBC Chapters 2,3 5, 6 Lab			HW 8 Due
38	7/1	Materials Review Video			HW 9 Due
	7/2	LAB 9: Review of Structural Drawings			
	7/3	FINAL EXAM (Comprehensive)			

Laboratory Schedule:

LAB SCHEDULE - SUBJECT TO REVISION				
CENG 3434 Summer 2020				
Lab Week No.	Date	Topic	LABS FROM SOMAYAJI TEXT	Assignment Due (by 3pm)
Week 1 (June 1- June 5)				
Lab 1	6/4	LAB 1: Aggregates	AGG-1, AGG-3, AGG-7	June 11, 2020
Week 2 (June 8 - June 12)				
Lab 2	6/9	LAB 2: Concrete Mixing and Field Tests	CON-1, CON-2, CON-3, CON-4	June 16, 2020
Lab 3	6/11	LAB 3: Concrete Beam Construction		June 18, 2020
Week 3 (June 15 - June 19)				
Lab 4	6/16	LAB 4: Tension Test of Metals		June 23, 2020
Lab 5	6/18	LAB 5: Masonry Absorption Test and Prism Construction	MAS-3, MAS-5	June 25, 2020
Week 4 (June 22 - June 26)				
Lab 6	6/23	LAB 6: Timber Lab	WOOD-2, WOOD-3, WOOD-4	June 30, 2020
Lab 7	6/25	LAB 7: Concrete Cylinder Test	CON-3	July 2, 2020
Week 5 (June 29 - July 3)				
Lab 8	6/30	LAB 8: IBC Chapters 2,3 5, 6 Lab		July 3, 2020
Lab 9	7/2	LAB 9: Review of Structural Drawings		July 2, 2020

Homework and Exam Schedule:

HOMWORK SCHEDULE - SUBJECT TO REVISION			
CENG 3434 Summer 1 2020			
Homework No.	Topic	Homework Assigned	Assignment Due
1	Review of Mechanics of Materials, Aggregates	June 1, 2020	June 5, 2020
2	Concrete	June 2, 2020	June 8, 2020
3	Concrete Mix Design	June 5, 2020	June 10, 2020
4	Steel	June 8, 2020	June 12, 2020
5	Masonry	June 10, 2020	June 17, 2020
6	Timber	June 15, 2020	June 22, 2020
7	IBC Chapters 5 and 6	June 22, 2020	June 26, 2020
8	Asphalt	June 24, 2020	June 30, 2020
9	IBC Chapter 10	June 26, 2020	July 1, 2020
Exam No.	Material Covered	Date	
1	Lessons 1-16, Homework 1-4	June 15, 2020	
2	Lessons 16-31, Homework 5-7	June 29, 2020	
Final	Comprehensive (entire course)	July 3, 2020	

Quiz Schedule:

COURSE SCHEDULE - SUBJECT TO REVISION					
CENG 3434 Summer 1 2020 (ONLINE)					
Lesson No.	Date	Topic	Lesson Material	Quiz Assigned	Quiz Due (9 am)
Week 1 (June 1 - June 5)					
1	6/1	Material types, properties and standards for testing and design	Chapter 1	June 1, 2020	June 2, 2020
2	6/1	Aggregates	2.1-2.3.3	June 1, 2020	June 2, 2020
3	6/1	Sampling techniques and particle size distribution	2.3.4	June 1, 2020	June 2, 2020
4	6/2	Concrete and Cement - Part 1	3.1-3.1.1, 3.3-3.4.2, 3.5	June 2, 2020	June 3, 2020
5	6/2	Concrete and Cement - Cement Behavior and Composition	3.4.3 - 3.4.6	June 2, 2020	June 3, 2020
6	6/2	Properties of Good Concrete	3.5 - 3.7	June 2, 2020	June 3, 2020
7	6/3	Concrete Properties - Field Testing and Curing	3.7 - 3.7.4	June 3, 2020	June 5, 2020
8	6/3	Properties of Hardened Concrete	3.8 - 3.8.5	June 3, 2020	June 5, 2020
9	6/3	Concrete Properties - Creep and Shrinkage	3.8.6 - 3.9.4	June 3, 2020	June 5, 2020
11	6/5	Concrete Types, Chapter 19 IBC	3.11 - 3.13, IBC 19	June 5, 2020	June 8, 2020
10	6/5	Concrete Mix Design	3.10	June 5, 2020	June 8, 2020
Week 2 (June 8 - June 12)					
12	6/8	Introduction to Steel	7-7.2	June 8, 2020	June 10, 2020
13	6/8	Steel Types and Properties	7.2-7.3	June 8, 2020	June 10, 2020
14	6/8	Structural steel	7.4 - 7.4.1	June 8, 2020	June 10, 2020
15	6/10	Reinforcing Steel	7.5-7.7	June 10, 2020	June 12, 2020
16	6/10	Laboratory Strength Tests of Steel	Cordon Book	June 10, 2020	June 12, 2020
17	6/10	Introduction to Masonry	4-4.1.3	June 10, 2020	June 12, 2020
18	6/12	Properties and Size of Masonry Units	4.1.4-4.1.8	June 12, 2020	June 15, 2020
19	6/12	Mortar and Grout	4.2-4.2.3, 4.2.4	June 12, 2020	June 15, 2020
20	6/12	Masonry Construction	4.3-1	June 12, 2020	June 15, 2020
Week 3 (June 15 - June 19)					
21	6/15	Properties of Masonry	4.3-2-4.5	June 15, 2020	June 17, 2020
22	6/15	Introduction to Timber	5.1-5.3.3	June 15, 2020	June 17, 2020
23	6/17	Defects, Deterioration and Shrinkage of Wood	5.3.4-5.5.1	June 17, 2020	June 19, 2020
25	6/17	"What Happened?" Failure Modes of Wood	5.6-5.8.2	June 17, 2020	June 19, 2020
24	6/17	Classification of Wood for Construction	5.9-5.9.1	June 17, 2020	June 19, 2020
26	6/19	Wood Products	5.9.2, 5.10-5.10.2	June 19, 2020	June 22, 2020
27	6/19	Wood Construction and Load Path	5.10.3-5.12	June 19, 2020	June 22, 2020
28	6/19	Wood Testing		June 19, 2020	June 22, 2020
Week 4 (June 22- June 26)					
29	6/22	IBC Chapters 2 and 3: Occupancy Classification	IBC Chapters 2 and 3	June 22, 2020	June 24, 2020
30	6/22	IBC Chapter 6: Construction Types	IBC Chapter 6	June 22, 2020	June 24, 2020
31	6/22	IBC Chapter 5: General Building Height and Area	IBC Chapter 5	June 22, 2020	June 24, 2020
32	6/24	ASTM overview	Powerpoint	June 24, 2020	June 26, 2020
33	6/24	Asphalt types	6.2-6.4	June 24, 2020	June 26, 2020
34	6/24	Properties of Asphalt	6.4-6.5.3	June 24, 2020	June 26, 2020
36	6/26	IBC Chapter 10: Means of Egress	IBC Chapter 10 (PPT)	June 26, 2020	June 29, 2020
35	6/26	HMA and Flexible vs. Rigid Pavements	6.6-6.7.2	June 26, 2020	June 29, 2020
Week 5 (June 29 - July 3)					
37	6/29	Plastics	Chapter 8	June 29, 2020	July 1, 2020
38	7/1	Materials Review Video		No quiz	No quiz