University of Texas at Tyler - Department of Civil Engineering

CENG 3371-031: Introduction to Environmental Engineering

LECTURE TIME & VENUE:

- Our course is scheduled from 02:00 PM-2:55 PM on T/Th in room (HEC Campus-0A216)
- *The Lab: T, [3:00 – 5:50 pm]; [D114]*
- *If you miss a scheduled class, you are still responsible for the material. The Presentation slides will be posted in the appropriate section of content in listed modules through the normal CANVAS modules labels as such.*

INSTRUCTOR:

Instructor Info: Dr. Zain Al-Houri
HEC A211
zalhouri@uttyler.edu

Office Hours (In Person)
M/T/W/Th: 11:15 AM – 12:15 PM
or by appointment (BEST PRACTICE is to email me ahead of time to set up an appointment for when you would like to meet.)

COURSE WEBSITE:

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

COURSE DESCRIPTION:

Welcome to CENG 3371 (Introduction to Environmental Engineering) the first of a two-course series on environmental engineering which includes this course and a design course (CENG 4371). Concepts covered are essentials of environmental engineering and the process materials and energy balance as a tool for understanding environmental processes and solving environmental engineering problems. Environmental engineering concepts for water, air and solid waste and strategies for managing their quality. The course also includes the concept of sustainability and the process of waste minimization, and risk management and environmental ethical issues in a global community. During the upcoming semester, I believe you will find our study of environmental engineering to be interesting, challenging, and rewarding.

PREREQUISITES/CO-REQUISITE:

CHEM 1311/CHEM 1111

LEARNING OBJECTIVES:

In this course we will explore why environmental engineering is a profession. Specific course objectives are:

1. List and define the major quality parameters for environmental media.
2. Describe the components of a sustainable environment.
3. Discuss and evaluate the ethical and public policy issues associated with environmental quality.
4. Define, describe, and discuss the necessity of water quality parameters.
5. Discuss important regulatory aspects of water quality, air quality and solid waste management.

6. Relate water quality parameters to environmental health.
7. Describe and evaluate environmental parameters to human (population) health.
8. Predict and evaluate changes in the environment owing to the release of effluents or pollution.
9. Describe and analyze the water and wastewater treatment processes.
10. Describe and evaluate the atmospheric (meteorological) effects on air pollutants.
11. Describe and analyze systems for managing solid waste and measures to protect the environment.
12. Apply engineering and science knowledge in the evaluation of contamination control.
13. Distinguish specific engineering and science skills necessary in the area of Environmental Engineering.
14. Perform experiments to investigate environmental engineering processes.

TEXTBOOK and ASSIGNED READINGS:

- **Textbook:** Introduction to Environmental Engineering. Mackenzie Davis and David Cornwell, McGraw Hill 2023. ISBN10: 1264563876, ISBN13: 9781264563876. All students are expected to secure a copy of this textbook.
- **Assigned Readings**: Doing the assigned reading prior to class will help you understand the material presented during the instruction and will fill in gaps for things we do not cover (I will not cover everything). It will also make you more familiar with terms and concepts to be covered. To help motivate you to do the reading there may be unannounced quizzes that cover the assigned sections of the text.

GRADES

Grades:	**Grade: Scale**
Homework/Quizzes/Discussions = 15%	A: 90-100
Professional Practice (three Org. attendance) = 5%	B: 80-89
Paper/Presentation = 10%	C: 70-79
Lab Memos = 15%	D: 60-69
Midterm Exams (2) = 30%	F: <60
Final Exam = 25%	

If necessary, I reserve the right to adjust the grade scale at the end of the semester to your benefit.If you earn less than 65% on all Exams or if you fail to earn at least 50% on the Final you may fail the course, **regardless of your course grade**.
****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.

There may be opportunities to earn bonus points for additional work on problem sets, exams, or for completion of other optional assignments. Opportunities for bonus points will be clearly identified by me and announced in class. Make use of these opportunities to extend your learning!

MID-TERM EXAMS AND FINAL EXAM:

- There will be 2 midterm examinations and one final examination. The exams are **TENITATIVELY** scheduled for:
  - Exam 1: Th, Feb 29th
  - Exam 2: Th, April 4th
  - Final Exam: As published by the University.

- Exams dates may be moved up or pushed back depending on the progress of the lectures.
- Official reasons for missing an exam are outlined in the UT Student Handbook. You are required to take a make-up Exam, regardless of your reason for missing the scheduled Exam. Report any conflict to me as soon as possible prior to the Exam.
- Failure to take the exam at the scheduled time will constitute a grade of zero in the exam.
- The mid-term exams and final exam are closed book. You can use a TI-30 calculator (or FE equivalent see calculator policy below), and instructor approved reference material.
- Use the restroom prior to coming to class to take an exam. Suspicious restroom breaks in the middle of an exam are not acceptable.
- I do not give exam backs, but you can see and review in class and in exams.
- ***Solutions to exams will NOT be posted on Canvas***, but you may stop by the office and see exam solutions.
- ALL EXAMS WILL BE HELD IN PERSON DURING CLASS TIME. THE FINAL EXAM WILL ALSO BE HELD IN PERSON AT THE TIME, DATE AND LOCATION SPECIFIED BY THE UNIVERSITY.

QUIZZES:

The instructor may give unannounced or announced in-class quizzes throughout the semester. There will be unannounced quizzes throughout the semester. These quizzes will cover material covered in previous lectures.

PROFESSIONAL PRACTICE:

Your professional practice grade will be based on your attendance at **3 ASCE student technical meetings** (cookout and game night events do not count) throughout the fall semester. Example of valid meetings include guest speakers, field trips, or any other technical meeting from either organization within the college of engineering. You are expected to attend, actively patriciate in all activities of the course. For each professional practice meeting you must take a picture as proof of attending the meeting. You must also include the name of the speaker and what you learned during the meeting. You should use template Word file when you attend professional practice meetings and must complete this for each meeting you attend. The due date to submit this is on the last day of class, which is on April 25th.

HOMEWORK:

Homework will be assigned on a regular basis (see homework schedule). Complete your homework within **one week from the day** it was assigned. 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 due date**. No late homework will be accepted except for unusual circumstances. You will be given full credit for submitting your homework ontime 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**. Homework solutions not submitted on engineering paper will receive only 90% of the graded credit. 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.

Students may discuss their homework solutions with one another, but each student must submit their own, independent solutions (i.e. you may not just copy someone else's homework). If you receive assistance from a fellow student on a particular problem, you must cite that assistance within your solution.

HOMEWORK SUBMISSION GUIDELINES (PROFESSIONALISM REQUIREMENTS)

1. Homework should be submitted using letter size (8 ½ x 11") paper. Engineering paper is required.
2. The header of the first page should include the following:
    a. Name of Student: LAST NAME, FIRST NAME (**All Caps**)
    b. Student Number
    c. Course Number and Name
    d. Homework Number
3. There should be no more than 2 problems per page. This is to ensure that there is enough space on the paper for the grader to add comments.
4. Multiple sheets should be stapled at the top left corner of the page if on paper submission is required.
5. The submitted papers should be free of frail edges, stains, smudges and wrinkles.
6. All problems should include:
    a. Problem Number
    b. A diagram of the problem
    c. A set of given quantities
    d. A set of unknown quantities
    e. A set of assumptions
7. All numbers and writing should be clear and readable.
8. When required to produce a graph, use a computer program such as excel or MATLAB to generatethe plot. Do not draw it by hand!

LATE HOMEWORK/ ASSIGNMENT POLICY

It is a basic principle of professionalism that "Professionals are not late."
A "COORDINATED LATE" submission occurs when you miss the suspense for a graded homework assignment, and you contact me in advance. Notification immediately before the submission will not suffice.
Point cuts up to the amounts below may be assessed for a "COORDINATED LATE" submission:
1. 0-24 hours late a deduction of 25% of the earned grade
2. 24-48 hours late a deduction of 50% of the earned grade
3. More than 48 hours late No credit.

COLLECTION OF STUDENT WORK

Throughout the semester I may 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.

EMBEDDED INDICATORS OF ACCOMPLISHMENT OF PROGRAM OUTCOMES

At times throughout the semester, portions of student work will be analyzed to determine if our program is accomplishing stated program outcomes based on established metrics. If your work is below the minimum established metric (70%), you will be required to repeat the assignment or that portion of the assignment until you achieve the minimum acceptable standard based on the metric.

Paper and TEAM PRESENTATION

Students, in groups (2-3 students), will be required to research and give a 20-minute presentation on one chosen topic of current environmental concern. A list of suggested topics will be provided. Every group will also prepare a summary paper. The presentation and the paper will count towards 10% of your grade. Students are required to select their group and submit a choice of topic by Thursday Mar

21, 2024. Students are expected to submit their paper and give an in class 20-minutes oral PowerPoint presentation about their selected topic on Tues, April 23rd, 2024.

CLASSROOM PROCEDURES:

- Bring study notes, textbook, note-taking material, and calculator TO EVERY CLASS. You may not borrow or exchange calculators during graded events. If your calculator fails during a graded exercise, I am not responsible for furnishing a substitute. Class preparation is your individual responsibility. Please refer to the Calculator Policy.
- You will need regular access to a computer with an Internet connection to be able to participate in some of the in-class activities during the period of this semester.
- I will take attendance every class. Non-attendance may adversely affect your grade. If your absence from class becomes excessive you may be asked by the instructor to withdraw from the class.
- It is a basic principle of professionalism that "Professionals are not Late." Please come to class on time and leave on time. Interruption of lecture is not acceptable. Normally an excuse would be given for being late or missing that class if you have a valid verified urgent emergency or some validated significant act of nature or God like a car accident.
- No food or snacks in classrooms and Labs.
- Phones ringing or vibrating are distracting during class or if you are texting during class, you will relinquish your device for the duration of the class. A second offense will result in a request for you to leave the classroom.

COMMUNICATION AND SUPPORT

- In general, the most efficient way to communicate and to get the help you need in your questions and/or concerns is **during my office hours.**
- If you cannot visit my office during office hours, you can send me emails with your questions. Please add "[Course Prefix and #]" in the subject title so that I recognize which course and section you are inquiring about. Please be as specific as possible in describing subjects and/or concepts you need more assistance from me. Be professional in writing emails!
- All email correspondence will take place through the Canvas system, and therefore using your Patriot email accounts; so check your Patriot email account often.
- I will try to respond to all emails within 24 hours.

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/calculator. 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.
- Use of cell phones during class time is not permitted during lessons.

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 theinstructor 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 **Feb 07th.**

CENSUS DATES:

The university requires that instructors report the attendance to the register at various points inthe semester. Therefore, on **January 29th** 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 thosewho do.

INFORMATION FOR CLASSROOMS AND LABORATORIES:

Students are strongly encouraged to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). The UT Tyler community of Patriots views adoption of these practices consistent with its HonorCode (Links to an external site.) and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher-than-normal temperature should stay at home and notify their faculty. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

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 pay 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 beaware of. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses such 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; gradeswill 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 requireassistance 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 thetest, 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 foruse 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 Blackboard. 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 Tylermain 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 visitwww.uttyler.edu/tobacco-free.

CAMPUS CARRY:

We respect the rights 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.

COURSE SCHEDULE - SUBJECT TO REVISION						
Week #	**DATE**	**LSN**	**Topic**	**Reading**	**Assignments**	**Lab Activities/Notes**
1	16-Jan	1	Course Introduction			
	18-Jan	2	Introduction: what is environmental engineering	1.1-1.4		
2	23-Jan	3	Environmental Systems	1.5-1.7	HW 1	Lab 01
	25-Jan	4	Risk Assessment	3.1-3.4		
3	30-Jan	5	Risk Assessment	3.1-3.4	HW 2	Lab 02
	1-Feb	6	Materials and Energy Balance-Introduction	4.1-4.7		
4	6-Feb	7	Materials Balance	4.1-4.7	HW 3	Lab 03
	8-Feb	8	Reactors	4.1-4.7		
5	13-Feb	9	Reactors	4.1-4.7	HW 4	Lab 04
	15-Feb	10	Water Resources Engineering	4.7		
6	20-Feb	11	Groundwater and wells	5.1-5.7	HW 5	Lab 05
	22-Feb	12	Water chemistry	5.1-5.7		
7	27-Feb	13	Water chemistry	5.1-5.7	HW 6	-
	29-Feb	14	**EXAM I**			
8	5-Mar	15	Water chemistry	6.1-6.10	HW 7	Lab 06
	7-Mar	16	Water chemistry	6.1-6.10		
9	12-Mar	**SPRING BREAK**				
	14-Mar					
10	19-Mar	17	Water treatment	6.1-6.10	HW 8	Lab 07
	21-Mar	18	Water treatment	6.1-6.10		
11	26-Mar	19	Water treatment	6.1-6.10	HW 9	Lab 08
	28-Mar	20	Water Pollution	7.1-7.6		
12	2-Apr	21	Water Pollution	7.1-7.6	HW10	-
	4-Apr	22	**EXAM II**			
13	9-Apr	23	Wastewater Treatment	8.1-8.5	HW11	Lab 09
	11-Apr	24	Wastewater Treatment	8.6-8.12		
14	16-Apr	25	Air Pollution	9.1-9.7	HW12	Lab 10
	18-Apr	26	Noise Pollution	10.1-10.7		
15	23-Apr	27	Solid waste management	11.1-11.6		Lab 11
	25-Apr	28	**FINAL EXAM REVIEW**			
16	30-Apr	**FINAL EXAM WEEK**				
	1-May	**Please refer to the published exam schedule by the University**				

CENG 3371-031L: General Requirements for Laboratory Reports

LABORATORY TIME & VENUE:

- The Lab of this course is scheduled from 03:00-5:50 PM on Tuesday-HEC D114.
- Laboratory attendance is required, and a short quiz will be given during the first five minutes of the lab.

LABORATORY REPORT:

- 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. 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.
- A laboratory report is required for each Lab. 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 upload a copy to Canvas. The report should be in the following format:
    - Cover Page: Laboratory Title, Course Number (CENG 3361), Your Names and Group Number. Each person in the group signs the cover page indicating that they have read the report and approve of the contents contained within.
    - Objective: Purpose of the lab should be explained in a few sentences.
    - Procedure/Theory: 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 should be typed in Excel), relevant calculations, and required plots. 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. BE SURE TO USE CAPTIONS FOR FIGURES AND TABLES! REFER TO THESE FIGURES AND TABLES SPECIFICALLY IN THE TEXT USING THE FIGURE/TABLE NUMBER!! 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 the topic to what you have learned from performing in this lab. Explain how this experiment is useful to solve practical civil engineering problems.
    - Team Contributions: The contributions of each team member should be stated in the **internal review form**. 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.
    - Things to remember: ***When writing your reports, avoid using first person like "I" or "we".***

GRADING:

Contributions towards each lab report grade (out of 100%)

- 10% Objective
- 20% Theory /Procedure

- 20% Calculation
- 25% Results and Discussion
- 25% Conclusion

TENTATIVE LAB SCHEDULE*

DATE	LAB	Topic	Due Date
01/16		No Lab Meeting (First Week)	Lab 0
01/23	1	Lab Introduction	Lab 01
01/30	2	Read: Handout ASTM Std. for ESA Complete Safety Policy, ESA Phase I Descriptive, Site Visit.	Lab 02
02/6	3	Calculations of Risk/Water Quality	Lab 03
02/13	4	Water Standards/Buffer	Lab 04
02/20	5	Ground Water Demonstration/Filtration	Lab 05
02/27	6	Exam I review	
03/05	7	Water Treatment Tour	Lab 06
03/12		No Lab Meeting (Spring Break)	
03/19	8	Jar Test- Water Softening and Flocculation	Lab 07
03/26	9	Filtration System Design	Lab 08
04/02	10	Exam II review	
04/09	10	BOD test	Lab 09
04/16	11	Solids Determination and Measurement	Lab 10
04/23	12	Students' Presentations	Lab 11
04/30	FINAL EXAM WEEK Please refer to the published exam schedule by the University		

*The Lab schedule is subject to change throughout the semester and the revisions will be noted in lab