MEMORANDUM FOR STUDENTS ENROLLED IN CENG 4381_031

SUBJECT: CENG 4381 Administrative Instructions – Fall 2023

Course Specific Policies

1. CENG 4381 Foundation Design
   Class Time: Tuesdays and Thursdays between 8:00 AM to 9:20 AM
   Class Room: HEC B210

2. Instructor: Dr. Kenan Hazirbaba
   Office: HEC A219
   Email: khazirbaba@uttyler.edu

3. Welcome to CENG 4381 – Foundation Design. In this course we will explore different aspects of foundation design, and expand on the knowledge you gained in soil mechanics. It is the intent of the course to teach you to apply basic soil and structural mechanics principles to solve foundation problems and to modify these solutions based on practical considerations. I am confident that you will find this course to be interesting, challenging, and rewarding. A tentative course schedule is provided in Attachment 1.

   Foundation engineering involves the design of the structural elements interfacing with the ground to provide satisfactory support. It has been said that soil mechanics is the science while foundation engineering is an art. In soil mechanics, idealized systems are often assumed and the application of appropriate theories results in solutions to the idealized problems. However, real soils are heterogeneous and many of the assumptions necessary to apply theoretical soil mechanics principles are not truly valid. Hence, considerable judgment based on knowledge and experience is necessary to solve real problems and a significant portion of any problem involves properly defining the problem.

   This classes introduces the concepts of defining the problem and helping you gain the knowledge requisite to solve foundation problems. Principal topics covered within this course include subsurface exploration, as well as analysis and design of shallow foundations, deep foundations, and earth retaining structures. Specific course objectives are provided in Attachment 2.

4. The office hours this semester will be on Tuesday and Thursday between 12:00 PM to 1:45 PM or by appointment.

5. Course Materials:

   a. I will post all course materials on Canvas. Canvas enrollment is now automatic with course registration, but you should ensure that you can access the class Canvas page

   b. Textbook: *Principles of Foundation Engineering, Ninth Edition by Braja M. Das and Nagaratnam Sivakugan, 2019, ISBN 9781337705028*

6. Exams and Grading:

   a. Grade Breakout and Cutoffs:

Course Points		**Grade Scale**		
Mid-term Exams (2 at 250 each)	500 (25%)	A	90.00%	1,800
Assignments / Quizzes	800 (40%)	B	80.00%	1,600
Professional Practice Grade	200 (10%)	C	70.00%	1,400
Final Examination	500 (25%)	D	60.00%	1,200
	2,000 (100%)	F	<60.00%	<1,200

If you earn a cumulative average of less than 60% on all exams, or if you fail to earn at least 50% on the final exam you may fail the course, **regardless of your course grade**. The distribution shown above is to graphically remind you of how well you are doing.

b. Mid-term Exams and Final Exam:

1) The dates for all exams are tentatively included in the course schedule. Official reasons for missing an exam are outlined in the UT Student Handbook. You are required to take a make-up Exam, regardless of your reason for missing the scheduled Exam. Report any conflict to me as soon as possible prior to the Exam.

2) Solutions to exams will not be posted on Canvas.

c. 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.

d. 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, 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.**

7. Homework: Homework problems will typically be assigned on a daily basis. 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**. The homework due date will be clearly given with the homework assignment. Homework is due by 11:59 pm on the due date.

HOMEWORK FORMAT: The production of a neat, organized, high-quality homework assignment cannot be overestimated nor can its importance to your course grade be overstated. A homework assignment should be something you are proud of and not something hastily "slapped together". Toward this end, considerable emphasis will be placed on not only getting the correct answer but also on how the solution is presented.

All homework is mandatory and becomes part of your grade. Failure to submit any required homework will result in an incomplete. As an engineer your goal is to make a clear, logical, and professional presentation of your work, which is both accurate and correct. As such both your presentation and the accuracy of your work are important, and both will be graded. It is critical that you show all of your work and leave "footprints" so that it can be easily followed.

a. Problem Sets:

1) **Use Engineer paper only or <u>full-page</u> printouts from Mathcad, Excel, Visual Analysis, etc.** You may neatly tape or glue short computer printouts onto Engineer paper at the appropriate place in the logical flow of the problem. Only use one side of a page. Clearly present **a brief problem statement and a sketch** with your solution. Clearly and concisely explain each step. <u>For narratives of more than a line or two, use your word processor or the text capability if you are using MathCAD or Excel.</u> <u>If you are writing out a paragraph or more, you must type it.</u>

2) Late Submissions. It is a basic principle of professionalism that **"Professionals are not late."** Absolutely **<u>NO</u>** late homework will be accepted. If it is not submitted by the deadline, you will receive a zero for the assignment. No exceptions.

3) Homework will not be graded in the traditional sense. You will be given full credit for submitting your homework on time and following the correct homework format. Homework that is not submitted as complete and following the homework guidelines will receive a 0. No partial credit is awarded on homework, it is 100% or 0.

4) All homework in this course must be properly documented. It is likely that you might receive help from your classmates - just simply document it. Information from the course textbooks (equations and outlines of procedures), class notes, or me is considered immediately available to all students and need not be acknowledged or documented. **YOU ARE REQUIRED TO ACKNOWLEDGE AND DOCUMENT ALL OTHER ASSISTANCE AND REFERENCES USED.** Documentation will be accomplished in accordance with any manual for writing, footnote or endnote, for papers, but for written homework, just place the documentation right at the point you received help using who and what assistance.

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

8. Professional Practice. During this semester, a portion of your grade in this course (15%) will be derived from a level of professional practice expectations. These expectations include a professional demeanor and work ethic (attitude), consistent daily preparation (assignment reading, homework completed on time, etc.), commitment to learning and fulfilling obligations and being engaged in course activities.

9. 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.

10. 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/rightsresponsibilities.php

11. 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

12. 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.

13. Grade Replacement/Forgiveness and Census Date Policies: 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 of which students need to be aware.

    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

14. 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.

15. Student Accessibility and Resources

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.

16. 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.

17. 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.

18. 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.

19. 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)

Attachments x2

Kenan Hazirbaba, PhD, PE

Topics Covered and Schedule

SUBJECTS	LESSONS
Basic Concepts	2
Soil Mechanics Review	2
Soil Exploration	3
Bearing Capacity	3
Spread Footing Design	3
Mat Foundation Design	2
Retaining Wall Design	2
Sheet Pile Design	2
Driven Pile Design	2
Drilled Shaft Construction	2
Collapsible/expansive soil	1
Soil Improvement	1
Course Summary	1
Exam Review Days	2
Totals:	**28**

CENG 4381 FOUNDATION DESIGN COURSE SCHEDULE - Fall 2023				
As of August 14, 2023 (Subject to revision as needed)				
Lesson#	**Date**	**Topic**	**HW Due**	
1	Aug 21	Introduction to foundation design	-	Homework assignments will be given throughout the semester, with due dates clearly defined (typically next class period). Homework handout sheets will be posted on the class Canvas page. Homework solutions will also be posted on the Canvas page. Be sure to clarify and fix anything you may have been unsure of.
2	Aug 23	Soil mechanics – Stress distribution, settlement	-	
3	Aug 28	Strain influence factor for elastic settlement	#1	
4	Aug 31	Soil exploration – Laboratory testing, SPT	#2 & #3	
	Sept 1	Census Day		
5	Sept 5	Soil exploration – CPT, boring logs and lab report	#4	
6	Sept 7	Ultimate bearing capacity, compression and eccentricity	#5	
7	Sept 12	Ultimate bearing capacity, eccentricity and special cases	#6	
8	Sept 14	Footing settlement, shallow footing design	-	
9	Sept 19	Shallow footing design	#7 & #8	
10	Sept 21	Combined footing and mat foundation design	#9	
11	Sept 26	Lateral earth pressure	#10	
12	Sept 28	Retaining wall design	#11	
13	Oct 3	Mid-Term Exam #1	#12	
14	Oct 5	Gravity and cantilevered wall design	#13	
15	Oct 10	MSE wall design (1)	#14	
16	Oct 12	MSE wall design (2)		
17	Oct 17	Sheet pile design (1)	#15	
18	Oct 19	Sheet pile design (2)		
19	Oct 24	Anchored sheet pile design	#16	
20	Oct 26	Driven pile design (1)		
	Oct 30	Last day to withdraw		
21	Oct 31	Driven pile design (2)	#17	
22	Nov 2	Drilled shaft design		
23	Nov 7	Mid-Term Exam #2		
24	Nov 9	Drilled shaft design (Lateral capacity)		
25	Nov 14	Collapsible Soil	#18	
26	Nov 16	Expansive soil		
Nov 20 – 24		*Thanksgiving Week – No Class*		
27	Nov 28	Soil Improvement	#19	
28	Nov 30	Course summary		

CENG 4381 Course Objectives:

1. Develop a subsurface exploration and lab testing program.
2. Analyze a subsurface profile and determine the most suitable foundation type to support a given structure.
3. Determine the allowable soil bearing pressure for a footing considering shear failure and settlement.
4. Design square and rectangular reinforced concrete footings.
5. Design a reinforced concrete mat foundation.
6. Determine the lateral earth pressure acting on an earth retaining structure.
7. Design a retaining wall.
8. Design a sheet pile structure.
9. Design a driven pile foundation.
10. Design a drilled shaft foundation.
11. Explain commonly used techniques of soil improvement.