CE 3210-002: Geotechnical Engineering
Spring 2014

INSTRUCTOR

Dr. Qiushi Chen
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Research website: http://www.clemson.edu/ces/geomechanics
Office hours: **MWF 1:10 – 2:30 pm**; other time by appointment

CLASS TIME AND PLACE

Lectures:	MWF 12:20 pm – 1:10 pm	217 Lowry Hall

TEACHING ASSISTANTS

Grader:	Wenping Gong (wenping@clemson.edu)
Lab Sections 1 & 2:	Akhter M. Hossain (mhossai@clemson.edu)
Lab Sections 3 & 4:	N. Mahinthakumar (nmahint@clemson.edu)
Lab Section 5:	Parishad Rahbari (prahbar@clemson.edu)

REQUIRED TEXTBOOKS AND PREREQUISITE

Principles of Geotechnical Engineering, Braja M. Das, 8th edition, Cengage Learning.
Soil Mechanics Laboratory Manual, Braja M. Das, 8th edition, Oxford University Press.
Prerequisite: CE 2060

COURSE OBJECTIVES

This is an introduction course to the subjection of geotechnical engineering. In this class, students will learn the fundamental concepts and be familiar with fundamental laboratory and field tests in geotechnical engineering. By the end of this course, students will be able to

1. Explain what geotechnical engineering is and why it is important.
2. Classify soil for civil engineering purposes.
3. Estimate soil permeability and quantity of seepage.
4. Determine the shear strength and compressibility parameters of soils from field and laboratory test data.
5. Determine the total, pore water, and effective stresses in a soil mass.
6. Determine stress changes in soil due to foundation loads.
7. Estimate the magnitude and time-rate of settlement due to consolidation.
8. Determine the normal and shear stresses at a point in a soil mass and use the Mohr-Coulomb failure criterion to evaluate possible failure.

GRADING

Labs	20%
Homework	15%
Quizzes and Class Participation*	15% (12 + 3)
Exams 1 & 2**	30%
Final Exam**	20%
Total	100%

A: 90-100; B: 80-89.99; C: 70-79.99; D: 60-69.99; F: 59.99 or less.

* Short quizzes will be given in class with no prior announcement. The purpose of the quiz is to review the key points and they are easy points to gain. **No make-up will be given**. However, the lowest two quiz scores will not be counted towards the final score. Please strive to be an active class participant - your grade will depend in part on your presence and participation in class.

** You are expected to take all exams at the time indicated in the syllabus. Missing exam will result a grade of zero for that exam. Exceptions or rescheduling requests can only be made on a very carefully considered individual basis, and only if you contact the instructor at least **1 week before** the exam.

HOMEWORK POLICY

- Homework is **due on Friday (by 4pm)** of the week following the homework is assigned, unless otherwise stated in the syllabus.
- Late penalty will be **20% each day (M-F)**. Late homework needs to include date and time that it is turned in, otherwise it will not be graded.
- If you are ill and are unable to do your homework, please contact me **prior to** the homework is due.
- Please use **letter-size** engineering paper for your homework. Graphs made freehand (without the aid of straight-edge, compass, or the computer) will be penalized heavily.
- Show all work to receive full credit.

CLASS ATTENDANCE AND POLICY

- If you miss a laboratory section without **a prior permission** from the lab instructor and me, you will receive a zero grade for that laboratory section.
- In the event that the instructor is late for lecture or lab, you are free to leave after you have waited for 15 minutes.
- No Food or cellphone usage during class period.

IMPORTANT DATES

A copy of academic calendar with important dates is available at
http://www.registrar.clemson.edu/html/acad_cal.htm
The exams are scheduled as

- Exam 1: February 12th (time 6:30 - 7:50pm)
- Exam 2: March 26th (time TBD)
- Final Exam: April 28th, 8:00am - 9:30am

EMAIL COMMUNICATIONS

- Please use your official Clemson email for communications regarding this course.
- To make sure your email won't be missed, please **start your email subject line with CE3210**.
- The very first time you email me, please use your full name, not just first name to avoid confusion.

ACADEMIC INTEGRITY

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

When in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty including a description of the misconduct, to the Dean of the Graduate School. At the same time, the faculty member may, but is not required to, inform each involved student privately of the nature of the alleged charge.

STUDENTS WITH DISABILITIES

Students with disabilities who need accommodations should make an appointment with Dr. Arlene Stewart, Director of Disability Services, to discuss specific needs within the first month of classes. Students should prevent a Faculty Accommodation Letter from Student Disability Services when they meet with instructors. Student Disability Services is located in Suite 239 Academic Success Building (656-6848; sds-l@clemson.edu). Please be aware that accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

CLEMSON UNIVERSITY'S TITLE IX POLICY

Clemson University's Title IX (Sexual Harassment) policy is located at
http://www.clemson.edu/campus-life/campus-services/access/harassment.html
Jerry Knighton serves as Clemson's Title IX coordinator.

FINAL REMARKS

Geotechnical engineering is an exciting topic. I hope you enjoy this class and learn something useful for your future career. You are always welcome to discuss with me your suggestions or concerns that will make this class better. Good luck to all of you in this class.

TENTATIVE LECTURE TOPICS AND SCHEDULE

WEEK/DATE	TOPICS (Corresponding Chapters)	HOMEWORK
Week 1 (1/8 - 1/10)	Introduction & Origins of Soils and Soil Types (Chapters 1 & 2)	[HW#1]: 2.2, 2.3, 2.4
Week 2 (1/13 - 1/17)	Sizes and Shapes (Chapter 2); Weight-volume Relationships (Chapter 3)	[HW#2]: see blackboard
Week 3 (1/20 - 1/24)	Weight-volume Relationships (Chapter 3); Plasticity and Soil Structure (Chapter 4)	[HW#3]: 4.1, 4.2, 3.17, 3.C.2
Week 4 (1/27 - 1/31)	Plasticity and Soil Structure (Chapter 4); Soil Classification (Chapter 5)	[HW#4]: see blackboard
Week 5 (2/3 - 2/7)	Soil Compaction (Chapter 6)	[HW#5]: 6.4, 6.5, 6.6
Week 6 (2/10 - 2/14)	**Exam 1 (on 2/12)**; Permeability (Chapter 7)	[HW#6]: 7.1, 7.2, 7.17
Week 7 (2/17 - 2/21)	Seepage (Chapter 8)	[HW#7]: see blackboard
Week 8 (2/24 - 2/28)	Effective Stress (Chapter 9)	[HW#8]: 9.1, 9.2, 9.8
Week 9 (3/2 - 3/7)	Effective Stress (Chapter 9); Mohr Circle of Stress (Chapter 10)	[HW#9]: 9.14, 10.4, 10.6
Week 10 (3/10 - 3/14)	Stress Distribution (Chapter 10)	[HW#10]: 10.19 (Due 3/28)
Week 11 (3/17 - 3/21)	**Spring Break (no class)**	
Week 12 (3/24 - 3/28)	Consolidation (Chapter 11); **Exam 2 (on 3/26)**	[HW#11]:11.4, 11.8
Week 13 (3/31 - 4/4)	Consolidation (Chapter 11)	[HW#12]: 11.9, 11.13, 11.16
Week 14 (4/7 - 4/11)	Consolidation (Chapter 11); Shear Strength of Soil (Chapter 12)	[HW#13]: 12.1, 12.2, 12.5, 12.6
Week 15 (4/14 - 4/18)	Shear Strength of Soil (Chapter 12)	[HW#14]: 12.13, 12.14, 12.15, 12.17, 12.18 **(Due on 4/28)**
Week 16 (4/21 - 4/25)	Shear Strength of Soil (Chapter 12); Final review	
Week 17 (4/28 - 5/2)	**Final exam (April 28th, 8:00am -- 10:00am)**	

Outline for the lab session will be distributed by lab assistants.