



CE343: SOIL MECHANICS

SPRING 2017 - 93528

Catalog description: (3 Units) In this course, we will discuss the fundamental physical and mechanical properties of soils and use them in the design of simple foundation and earth retaining systems. We will use certain fundamental principles of solid mechanics and fluid mechanics to describe the mechanical behavior of soils.

Prerequisite(s): CE215: Mechanics of Solids or permission of the instructor. If the instructor has waived the prerequisite(s), you still take full responsibility for your performance in this course.

Course objectives: To educate students on the fundamental physical and mechanical properties of soils and on the analysis and design of simple foundation and earth retaining systems.

ABET outcomes:

Primary

- C. Ability to design a system, component, or process to meet desired needs
- M. Be proficient in the major areas of civil engineering

Secondary

- A. Apply mathematics, science and engineering principles
- B. Ability to design and conduct experiments and interpret data
- E. Ability to identify, formulate, and solve engineering problems
- K. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- L. Pass the FE exam as the first step towards professional registration

Instructor: Cac M. Dao, Ph.D.
Class Time & Place: MWF 1:00 – 1:50pm @ R P Harvill Bldg., Room 115
Office Hours: M & W 2:00 – 3:00pm
Office: CE Bldg., Room 208
e-mail: cmd@email.arizona.edu

Textbook: Geotechnical Engineering: Principles and Practices, by D. Coduto, M. Yeung & W. Kitch, Pearson, 2011, 2nd Edition.

Home Work: Homework problems will be posted on d2l. Homework is to be done neatly using only one side of a sheet. Homework due date and cutoff time will be announced every time a homework is assigned. The homework submitted after the due date will be marked late but will be graded and returned as long as it is submitted before the cutoff time. Homework submitted after the cutoff time will not be graded and a grade of zero will be assigned.

Examinations: You **will be required** to take two midterm examinations during the semester and a final examination. All exams are closed book; calculators are permitted.

Examinations are regarded as an engineering report. Procedures and presentation of solutions should be precise and legible. Penalties are assessed for: (1) algebra and arithmetic errors; (2) answers presented without proper units, sign or direction; (3) incomplete free body diagram; and (4) illegible presentation. **No credit will be given for correct answers obtained by incorrect reasoning or compensation errors.** Partial credit may be given for work that pertains to the correct solution.

Times for the midterm exams will be announced in the class. Calculators that can be used for exams are given in the following link. These are the approved calculators for FE (Fundamentals of Engineering) certification exam also
<http://ncees.org/about-ncees/news/2013-approved-calculator-list-announced/>

Grading Policies:

Midterm Exams	50%
Final Exam	30%
Homework	20%

Assignment of the final grade will be based on the following scale:

A	90 - 100
B	80 < 90
C	70 < 80
D	60 < 70
E	< 60

Benefit for submitting homework on time: Students who submit their homework on time will be given the higher grade if their total points are near the borderline between two grades.

Absence and Class Participation Policies: Participating in course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Students who miss class due to illness or emergency are required to bring documentation from their healthcare provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

Please examine the course syllabus for potential conflicts at the start of the semester and promptly notify me via email of any anticipated accommodation needs, providing as much notice as possible.

If you miss class for any reason, you must check D2L to review the course news as well as the lecture slides and other materials from the class that you missed.

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/2016-17/policies/classatten.htm>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See:

<http://uhap.web.arizona.edu/policy/appointed-personnel/7.04.02>

Classroom Behavior Policy: To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (i.e. texting, chatting, reading a newspaper, making phone calls, web surfing, etc).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Nondiscrimination and Anti-Harassment Policy: The University is committed to creating and maintaining an environment free of discrimination

<http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Policy Regarding Dishonest Scholastic Work: The University's Code of Academic Integrity holds the student fully responsible for the content and integrity of all academic work related to examinations, homework, term projects, laboratory reports, and any other grading component. Furthermore, the ethical principles of the engineering profession as enunciated in the codes of ethics of various engineering professional societies specifically prohibit dishonest work and/or plagiarism. Therefore, in the event that an instructor observes or is made aware of cheating taking place in this course, he/she will take action to make sure that those involved are subjected to the most severe disciplinary sanctions permitted by the University.

Accessibility and Accommodations: It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

Students with disabilities or special needs who require reasonable accommodations to fully participate in course activities or meet course requirements must register with the S.A.L.T. Center (<http://www.salt.arizona.edu/>) or the Disability Resource Center (<http://drc.arizona.edu/>). If you qualify for special accommodations, please email or bring your letter of request to me as soon as possible.

Class Note Copyright: Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Providing student email addresses to a third party is not permitted. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA email to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of electronic resources provided by The University of Arizona. This conduct may also constitute copyright infringement.

THESE POLICIES WILL BE STRICTLY ENFORCED WITHOUT EXCEPTION.

ABET 2010 Criteria Course Classification Form

Course Number CE 343

Course Name Soil Mechanics

Required? Circle: **YES** / NO

Semester/Instructor Spring 2017 – Cac M Dao, Ph.D.

Homework Frequency weekly

Exam Frequency Two (2) midterms & one (1) final

Course Project? Circle: YES / **NO**

Labs or Case Studies? Circle: YES / **NO**

For each of the following ABET outcome criteria, please list the level (High, Medium, Low, or blank if not applicable) contained in this course. The criteria descriptions that will be used by the College in the ABET evaluation are attached. Please describe the relevant course activities that you can use to justify why you think your course meets the criteria. **No course is expected to address all of these criteria and it would be rare to have more than 2 or 3 criteria at a high level (except a capstone course)** Be conservative in your judgment. For the ABET evaluation, we will assess student performance for criteria that are judged High. If you judge your course as High in a criteria, then the course should include a large percentage of effort (class time, homework, projects) devoted to the criteria. Note that 2 extra table entries are available for departments to specify their own criteria.

Outcome criteria	Level H M L	Relevant Activities
A. Apply mathematics, science and engineering principles	M	Analysis of fundamental soil problems; use equations to solve problems.
B. Ability to design and conduct experiments and interpret data	L	Analysis of experimental data to evaluate soil properties.
C. Ability to design a system, component, or process to meet desired needs	H	Design of simple foundation systems.
D. Ability to function on multidisciplinary teams		
E. Ability to identify, formulate, and solve engineering problems	M	Solution of practically oriented problems.
F. Understanding of professional and ethical responsibility		
G. Ability to communicate effectively		
H. The broad education necessary to understand the impact of engineering solutions in a global context		
I. Recognition of the need for and an ability to engage in life-long learning		
J. Knowledge of contemporary issues		
K. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	M	Analysis of different types of soil structures using software such as Excel.
L. Pass the FE exam as the first step towards professional registration	M	This is the primary course for the geotechnical content on the FE exam.
M. Be proficient in the major areas of civil engineering	H	This is the primary course in one of the major areas, geotechnical engineering.