CE441/541: Earth Structures in Geotechnical Engineering

Fall 2017

Instructor:	Dr. Lianyang Zhang, CE Building/Room 200A Phone: 626-0532; E-mail: lyzhang@email.arizona.edu
Time and Room:	TuTh 11:00AM-12:15PM; Elec. & Comp. Engr, Rm 258
Office Hours:	TuTh 4:30-6:00PM or By Appointment

Prerequisite(s)

CE343 Geotechnical Engineering and Design
or permission of the instructor. If the instructor has waived the prerequisite(s), you still take full responsibility for your performance in this course.

Texts

Muni Budhu. Soil Mechanics and Foundations. John Wiley & Sons. 3rd edition. 2010.

References (which will be posted on D2L)

1. Peck, R. B. (1962). "Art and science in subsurface engineering." Geotechnique, 12(1), 60-66.
2. Peck, R. B. (1969). "Advantages and limitations of the observational method in applied soil mechanics." Geotechnique, 19(2), 171-187.
3. Billington, D. P., Jackson, D. C., and Melosi, M. V. (2005). *The History of Large Federal Dams: Planning, Design, and Construction in the Era of Big Dams*. U.S. Department of the Interior Bureau of Reclamation, Denver, Colorado.
4. NCHRP (2012). *Cost-Effective and Sustainable Road Slope Stabilization and Erosion Control*. NCHRP Synthesis 430.
5. WSDOT (2013). *Design Guidelines for Horizontal Drains Used for Slope Stabilization*. WSDOT Research Report WA-RD 787.1.
6. FHWA (1999). *Geotechnical Engineering Circular No.4: Ground Anchors and Anchored Systems*.
7. FHWA (2001). *Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines*. FHWA-NHI-00-043.
8. FHWA (2003). *Geotechnical Engineering Circular No.7: Soil Nail Walls*.

Grading Criteria

ACTIVITIES	PERCENTAGES
Attendance, Participation & Quizzes	10%
Homework	20%
Design Projects	15%
Mid-Term Exam	20%
Final Exam	35%

Attendance, Participation & Quizzes (10%)

Attendance will be randomly recorded by giving mini quizzes in class. If you miss a class when a quiz is given, you will lose the corresponding points for both the attendance and the quiz. Your participation in the class will be recorded based on answering oral questions in the class (right or wrong, does not matter) and participating in all class discussions. ***If you need to be absent from the class for justifiable reasons (sickness, family obligations, etc.), you must inform the instructor in advance (usually at least one week).***

Homework (20%)

Homework problems and due dates are listed on the schedule sheet. Homework must be turned in at the beginning of the class in the classroom on the due date. Late turned in homeworks will receive a zero grade. Students are expected to turn in neat and organized homework on engineering problem sheets using only one side of the sheet. Any homework which is sloppy, difficult to read, or difficult to understand will receive a reduced grade.

Mid-Term Exam (20%)

One mid-term exam will be given. The exam will be held at the same location as the class. It will be open book and open notes.

Design Projects (15%)

The specific requirements for each project will be given on the assignment.

Final Exam (35%)

A final exam worth 35% of the total grade will be given at the end of the semester on the date/time listed in UA Calendar. The final exam will cover the entire syllabus (comprehensive) and be open book and open notes.

Grading Scale

Total Score	Grade Point	Total Score	Grade Point
≥ 90	A	≥ 60 to < 70	D
≥ 80 to < 90	B	< 60	E
≥ 70 to < 80	C		

Notes: 1. If the class average is above 80, grades will be based on the "traditional" scale presented in the above table. If the class average is below 80, I may translate the grading scheme by statistical curving to reflect the true class average.
2. The instructor will make the borderline decisions based on the student's motivation, attendance, participation in the class, and quality of work.

Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop

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: https://deanofstudents.arizona.edu/absences

Participating in the 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 health-care provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

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 (e.g., 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.

Accessibility and Accommodations

Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit http://drc.arizona.edu.

If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate.

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.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity.

The University Libraries have some excellent tips for avoiding plagiarism, available at http://www.library.arizona.edu/help/tutorials/plagiarism/index.html.

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. 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 e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-harassment Policy

The University is committed to creating and maintaining an environment free of discrimination; see http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

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Fall 2017 Class Schedule **Instructor: Lianyang Zhang**

Week	Date	Topic	Reading	HW/Project	Due(+)
1	Tue Aug 22	Introduction	Ref. 1, 2, 3		
	Thu Aug 24	Soil Mechanics Review	Ch. 1 - 10		
2	Tue Aug 29				
	Thu Aug 31	2D Flow	Ch. 14	HW1: 14.2, 14.4	Sep 21
3	Tue Sep 5			HW2: 14.7 ($\boldsymbol{k_x}$ = **12×10^{-5} cm/s**), 14.8, 14.10, 14.11	Oct 3
	Thu Sep 7				
4	Tue Sep 12				
	Thu Sep 14			Project 1	Oct 10
5	Tue Sep 19	Slope Stability	Ch. 16; Ref. 4, 5	HW3: 16.1, 16.3, 16.5, 16.6	Oct 17
	Thu Sep 21				
6	Tue Sep 26				
	Thu Sep 28				
7	Tue Oct 3			Project 2	Oct 24
	Thu Oct 5	Lateral Earth Pressures	15.0 to 15.7	HW4: 15.4, 15.5, 15.6	Oct 31
8	Tue Oct 10				
	Thu Oct 12				
9	Tue Oct 17				
	Thu Oct 19	**Midterm Exam**			
10	Tue Oct 24	Retaining Walls; Rigid Retaining Walls; Flexible Retaining Walls; Anchor Walls; Braced Excavation	15.8 to 15.11; Ref. 6	HW5: 15.10, 15.12, 15.15	Nov 14
	Thu Oct 26				
11	Tue Oct 31				
	Thu Nov 2				
12	Tue Nov 7				
	Thu Nov 9	MSE Walls	15.12; Ref. 7	HW6: 15.18, 15.19, 15.20	Nov 28
13	Tue Nov 14				
	Thu Nov 16				
14	Tue Nov 21	Soil Nail Walls	15.13; Ref. 8		
	Thu Nov 23	**Thanksgiving – No Class**			
15	Tue Nov 28	Soil Nail Walls			
	Thu Nov 30	Miscellaneous		Project 3	Dec 5
16	Tue Dec 5	Final Review			
FINAL EXAM (Open Book and Open Notes): Monday Dec 11: 10:30AM - 12:30PM					

+ Due dates may change depending on the course progress.