

CE 482 FOUNDATION DESIGN
Fall 2015

Instructor: Dr. Amy L. Rechenmacher, KAP 230D, 213-740-3615, arechenm@usc.edu

Instructor's Office Hours: Tuesdays 1:30-4:30 pm, KAP 230D or by appointment

Required Textbook: Principles of Foundation Engineering, 8th ed., by Braja Das, Cengage

Supplementary Material: Naval Facilities (NAVFACS) Engineering Command, Design Manual (DM) 7.02 (last published 1986) – *will be provided by the instructor as needed*

Teaching Assistant: Hoda El Safty, elsafty@usc.edu

TA Office Hours: Tuesdays 8:30-11:00 am, KAP 239

Course Description: The course focuses on the application of fundamental soil mechanics principles to analyze and design foundation systems and soil retaining structures to deliver intended performance. Students will be introduced to field exploration and testing methods to determine relevant soil properties for use in foundation design. Important aspects of technical writing in reporting geotechnical design information will be introduced, discussed, and applied.

Goals:

- Learn methods of subsurface exploration and soil profile characterization.
- Learn standard methods for design of spread footings (shallow foundations), retaining walls, shoring, pile (deep) foundations, and ground improvement.
- Learn to apply safety factors in foundation design.
- Learn to design within constraints.
- Develop writing skills for engineering proposals and reports.
- Master knowledge needed for geotechnical portion of PE exam.

Grading:

Homework:	15%
Final Project:	25%
Midterm Exam 1:	30%
Midterm Exam 2:	30%
Participation:	<i>come to class because much of the book is wrong!</i>

Project: There will be one design project, due at the end of the semester, executed in groups of 2-4 students. The project will involve writing a professional engineering report detailing the design of a particular foundation element or system. In addition to technical content, strict attention will be paid to professional presentation and appropriate technical communication skills. The project may be assigned in portions. A sample project report will be provided.

Statement on Academic Integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Statement for Students with Disability: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.– 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

CE 482 Foundation Design Course Schedule

Week No.	Date	Chapter (Das)	Topic
1	8/24	Ch 1, 2.1-2.12	Introduction, Review of Soil Properties
	8/26	2.13 – 2.21	Review of Soil Properties, cont'd
2	8/31	Ch. 3	Subsurface Exploration
	9/2	Ch. 3	Subsurface Exploration, cont'd
3	9/7		NO CLASS: Labor Day
	9/9	Ch. 4	Shallow Foundations: Bearing Capacity
4	9/14	Ch. 4	Shallow Foundations: Bearing Capacity, cont'd
	9/16	Ch. 4	Shallow Foundations: Bearing Capacity, cont'd
5	9/21	Ch. 5	Bearing Capacity: Special Cases
	9/23	Ch. 5*	Bearing Capacity: Special Cases
6	9/28	Ch. 6*, Ch. 7	Stresses beneath foundations; Foundation settlement
	9/30	Ch. 7	Shallow Foundation Settlement
7	10/5	Ch. 7	Shallow Foundation Settlement, cont'd
	10/7	Ch. 7	Shallow Foundation Settlement, cont'd
8	10/12	Ch. 9	Pile Foundations
	10/14		Midterm Exam (Chapters 1-6)
9	10/19	Ch. 9	Pile Foundations, cont'd
	10/21	Ch. 9	Pile Foundations, cont'd
10	10/26	Ch. 9	Pile Foundations, cont'd
	10/28	Ch. 10	Drilled Shaft Foundations
11	11/2	Ch. 12	Lateral Earth Pressure
	11/4	Ch. 13	Gravity/Cantilever Wall Design
12	11/9	Ch. 13	Mechanically Stabilized Earth (MSE) Walls
	11/11	Ch. 14	Sheet Pile Walls
13	11/16	Ch. 15	Braced Cuts
	11/18	Ch. 16	Ground Improvement Methods
14	11/23	Ch. 16	Ground Improvement Methods
	11/25		NO CLASS: Thanksgiving
15	11/30		Review
	12/2		Midterm Exam 2 (Chapters 7, 9-10, 12-16)
	Monday, Dec. 14		Final Project Due

* Note: supplements from Naval Facilities (NAVFACS) Engineering Command Design Manual (DM) 7.02 (last published 1986) will be provided where relevant