

CEE 366

Basic Soil Mechanics Laboratory Winter Quarter 2007

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Office Hours:	MW 2:30-3:30 pm		TBD

Philosophy: In the laboratory portion of this course, you will have the opportunity to gain “hands-on” experience with some of the laboratory tests and techniques used in soil mechanics today. Maybe more so than any other civil engineering discipline, geotechnical engineering relies on the gathering and analysis of data about our material (soil) with the purpose of producing an acceptable design. This is due to the inherent variability of soil strata, and the need to accurately describe these materials prior to the engineer’s development of a design (a geotechnical engineer cannot specify material properties much the way a structural engineer can). Much of this gathering of data is done in the soils lab. This quarter, you will gain experience in both the performance of soils tests and the subsequent analysis of that data for some of the more fundamental soil mechanics laboratory procedures.

Each lab assignment will be handed out in class, either on the Monday of the lab or on the preceding Friday. The lab assignments for this class will be cast in the form of consulting projects that provide the motivation for the test being performed – the assignments should give you examples of how the information from the tests you are performing would be used in professional practice.

The assignments will require you present the results of your laboratory work in the form of a letter to a client, contractor, etc. Preparation of good, clear, professional letter is part of the assignment, just as it is a big part of professional practice – it is not something to be glossed over (at least, if you want to get a good grade in the lab). Supporting data and calculations will be attached to the letter.

Lab Reports: The assignments will require you present the results of your laboratory work in the form of a letter to a client, contractor, etc. Preparation of good, clear, professional letter is part of the assignment, just as it is a big part of professional practice – it is not something to be glossed over (at least, if

you want to get a good grade in the lab). Supporting data and calculations will be attached to the letter (an example of this portion can be found in Lab_Template.pdf). The reports are due at the beginning of the lab section a week following the experiment. Late reports will not be accepted. It is permissible for your lab group to work together on data reduction and calculations. However, you are expected to do **YOUR OWN WORK**. This includes plotting your own graphs, producing your own results tables and writing your own conclusions. The following criteria for reports should be kept in mind:

- Letters should be concise, clear and complete.
- Plots should be computer-generated. Use ink and a French curve to draw trendlines if applicable.
- Reports should be typewritten.
- Data should not be faked to obtain ‘acceptable’ results: a discussion of why your results may be questionable is both more professional and ethical.
- Above all, professional quality work is expected. You will all graduate in about a year (at most...). Now is the time to learn the proper method of producing these reports—not when your career is on the line!

Procedures: The lab procedures are available as PDF files. The procedures have explanatory text, step-by-step instructions, and data sheets for each laboratory exercise.

Grading: Each laboratory assignment will be graded on a 10-point basis, unless otherwise stated. Three of the points will be for the quality of the letter you write, and the rest for the accuracy of the technical aspects of your work.

Spring Quarter Lab Schedule:

Week	Laboratory Exercise	Required Reading	Supplementary Reading
1	Visual Classification	ASTM D 2488	
2	Grain size analysis	26-32	Chapter 3
3	Atterberg limits	34-41	Chapter 3
4	Compaction	109-117	Chapter 5
5	Permeability	199-212	Chapter 7
6	Consolidation	283-293	Chapter 8
7	Consolidation (cont'd.)	294-299; 309-326	Chapter 8; Chapter 9
8	Direct shear	458-462	431-458
9	CD triaxial test	463-468; 473-484	431-458
10	Undrained shear strength	566-577	545-566; 586-598

Notes:

- Above all, it is required that you read the laboratory handout for that week's lab before coming to class.
- Attendance in lab is mandatory!
- All of the above reading selections come from your text, Holtz and Kovacs (1981).
- Generally, most of the above required readings will have been previously covered by the lecture portion of this course. However, if they have not already been covered, they must be read prior to attendance in lab.
- Supplementary readings are not, by definition, required. It is, however, in your best interest to have a good understanding of the covered topics. To this end, the above list provides some reading that will supplement both the required readings and the lab exercises you will perform.