

UNIVERSITY OF UTAH
DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING
CVEEN 3315, GEOTECHNICAL ENGINEERING LABORATORY - FALL 2017

Instructor: Dr. Evert C. Lawton; *Office* – 2028 CME
Phone: 585-3947 *E-mail:* Lawton@civil.utah.edu
Office Hours: To Be Announced

Teaching Assistants: **TO BE ANNOUNCED**

Lab Manual: None – handouts on laboratory procedures and other details can be downloaded from CANVAS

Goals: (1) To get hands-on experience performing laboratory and field tests used to measure index and engineering properties of soil; and (2) to understand the use and significance of these properties in practical geotechnical engineering analysis and design.

Grading:	<u>Grade</u>	<u>Score (%)</u>	<u>Grade</u>	<u>Score</u>
	A	95-100	C	73-76
	A-	90-94	C-	70-72
	B+	87-89	D+	67-69
	B	83-86	D	63-66
	B-	80-82	D-	60-62
	C+	77-79	E	<60

General Policies:

Schedule. Experiments will be performed according to the attached schedule. The schedule may be revised in the event of unforeseen circumstances. You are responsible for reading the appropriate handout(s) prior to the laboratory to determine proper procedures, equipment to be used, etc.

Attendance. **ATTENDANCE IS MANDATORY FOR ALL LABORATORY SESSIONS.** In the event of an emergency, notify your instructor or one of the teaching assistants as soon as possible that you will be missing the scheduled laboratory session and be prepared to supply evidence to support the nature of your emergency. With approval of the T.A., you may attend another session of the missed laboratory during that week. If you miss both the laboratory lecture and the laboratory without prior notification, you will receive a zero lab participation grade for that week's laboratory assignment. No laboratory can be made up. Tardiness or leaving early should be avoided. If you are tardy, this may result in your group leader giving you deductions in the participation part of your laboratory grade. The laboratory session is scheduled to end at 5:00 p.m. Do not make plans to leave before then because some experiments will require that much time to perform.

Clean-up. Each group is responsible for (a) cleaning the equipment that they used, (b) cleaning up any mess that the group made, and (c) returning the equipment to its proper location. Failure to do so will result in a reduced grade for every student in that group. When you leave the laboratory it should be as clean and organized as when you came.

Late Penalty. Laboratory reports are due at the **beginning** of the laboratory session on the due date. Late laboratory reports will receive a **penalty of 10% per day. No lab assignment will be accepted that is more than one week late, unless prior approval has been obtained from the instructor.**

Working in Groups and Participation. Students will be required to work in groups. Students in a group must share the responsibility as equally as possible and help each other in performing the necessary tasks to complete the experiments and laboratory report successfully and in professional manner. **The laboratory report will be prepared and submitted by the group.** Each student's participation grade will be determined by the teaching assistant and the group leader.

- **25 percent of your laboratory grade depends on your participation during the laboratory session.**
- **25 percent of your laboratory grade depends on your participation in performing calculations for the report and helping to write the report.**

Your group members will hand in a participation sheet that will be used to grade your in-laboratory and laboratory write-up participation. They will categorize your participation in the following:

Responsibilities of Group Leader

- Organizing group out-of-class activities
- Assembling and proof reading laboratory report
- Printing and submitting report
- Assigning participation grade to team members

Grading of In-Lab Participation

(1) Fully participated (25 points), (2) participated significantly but could have participated more (20 points), (3) moderate participation (15 points), (4) minimal participation, tardy, or left early (10 points), (5) did not participate (0 points).

Grading of Lab Write-up Participation

(1) Met expectations (25 points), (2) came close to meeting expectations (20 points), (3) moderate participation (15 points), (4) participated some but did not come close to meeting expectations (10 points), (5) minimal participation (5 points), (6) did not participate (0 points).

Laboratory Format. See course website for PDF file containing departmental requirements for laboratory reports (*CVEEN Format for Lab Reports.pdf*).

The TA(s) will assign the groups prior to or during the first laboratory session.

**CVEEN 3315 - Laboratory Participation Grade Sheet
Fall Semester 2017**

Group Leader: _____

Laboratory Number and Name: _____

Laboratory Session: Monday Tuesday Wednesday Thursday Friday (Circle One)

Date: _____

Group Member Name: _____

Laboratory Participation Grade (Circle)

(1) Fully participated (25 points), (2) participated significantly but could have participated more (20 points), (3) moderate participation (15 points), (4) minimal participation, tardy, or left early (10 points), (5) did not participate (0 points).

Report Write-up Participation Grade (Circle)

(1) Met expectations (25 points), (2) came close to meeting expectations (20 points), (3) moderate participation (15 points), (4) participated some but did not come close to meeting expectations (10 points), (5) minimal participation (5 points), (6) did not participate (0 points).

Group Member Name: _____

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CVEEN 3315 - GEOTECHNICAL ENGINEERING LABORATORY

INSTRUCTIONS FOR LABORATORY PROCEDURE AND PROPER CARE OF EQUIPMENT

1. The teaching assistant(s) (TAs) will have the necessary equipment and supplies for each group laid out in a designated area. Make note of all equipment and supplies and keep track of everything during the experiment.
2. **ABSOLUTELY NO SOIL SHOULD BE PLACED IN THE SINKS.** Dump all soil in the appropriate container and wipe off the equipment, dishes, cans, etc. with a paper towel before washing in the sink.
3. **TAKE CARE OF THE EQUIPMENT AS IF IT WERE YOUR OWN.** Equipment can easily be damaged or broken if proper care is not exercised. Much of the equipment is expensive and difficult to replace or repair. **BE ESPECIALLY CAREFUL NOT TO OVERLOAD THE ELECTRONIC SCALES.** If you are in doubt about whether the object you are going to weigh more than the capacity of the scale, please ask one of the TAs for help. It typically costs \$1,000 or more to repair an electronic scale after it has been overloaded.
4. Always note on your data sheet the brand name, model number, and location within the room of the scale you are using. Always use the same scale when weighing materials for the same experiment because there will be slight differences in the calibration of each scale.
5. All equipment and the laboratory must be thoroughly cleaned before leaving. The rule to be followed is that the equipment and the laboratory must be as clean or cleaner than when you started. Each group is responsible for (a) cleaning the equipment that they used, (b) cleaning up any mess that the group made, including the countertops, floor, etc., and (c) returning the equipment to its proper location.
6. When your group is finished with the experiment and all equipment and the laboratory have been cleaned, notify the TA(s) that you are done. The TA(s) will check to ensure that all of the equipment is there and is cleaned and will ask your group members to return everything to its proper location. One copy of your laboratory data for that day's experiment should be signed by the group member who recorded the data and turned in to the teaching assistant. **Your group may leave only after receiving permission from the TA(s).**

TENTATIVE LABORATORY SCHEDULE

<i>Date</i>	<i>Topic(s)</i>	<i>Reading Assignment</i>	<i>Report/Assignment Due</i>
8/23	Introduction, Laboratory Safety	Lab Syllabus and Lab Handouts 1 - 3	Sign Safety Certification at end of Lab
8/30	Sieve Analysis, Hydrometer Analysis	Sieve Analysis Lab.zip, Hydrometer Lab.zip	9/6
9/6	Atterberg Limits (Liquid Limit and Plastic Limit)	Atterberg Limits Lab.zip	9/13
9/13	Compaction (Proctor and Harvard Miniature) tests	Compaction Lab.zip	9/20
9/20	Field Density (Sand Cone)	Sand Cone Lab.zip	9/27
9/27	Wetting-Induced Volume Changes (Swell, Collapse, Shrinkage, Slaking)	Collapse Swell Shrinkage Slaking Lab.pdf	10/4
10/4	Permeability (Constant and Falling Head Tests)	Permeability Lab.pdf	10/18
10/11	NO LAB - SPRING BREAK		
10/18	No Lab - download and watch video on Drilling and Sampling from course website and complete written assignment	Drilling and Sampling Video.pdf	10/25
10/25	1-D Consolidation	Consolidation Lab.zip	11/15
11/1	1-D Consolidation	Consolidation Lab.zip	11/15
11/8	1-D Consolidation	Consolidation Lab.zip	11/15
11/15	Direct Shear Strength Test on Granular Soil	Direct Shear Lab.zip	11/22
11/22	Unconfined Compressive Strength Test on Cohesive Soil	Unconfined Compressive Strength Lab.zip	11/29
11/29	No Lab - download and watch videos on Cone Penetration Test and Borehole Shear Test from course website and complete written assignment	CPT-BST Lab Assignment.pdf	12/6
12/6	Triaxial Shear Strength Test (CD) on Granular Soil (attendance is mandatory - failure to attend will result in a grade of E for the entire lab course)		No Report