

The University of Arizona
Department of Civil Engineering and Engineering Mechanics

CE349 (Soils Laboratory) Syllabus: Fall 2017

Instructor:	Arash Nikvar Hassani, CEEM Bldg., Room 207A Email: nikvar@email.arizona.edu
Office hours:	Fridays 10:00 AM- 17:00 PM or by appointment
Class Hours	Section A (experiment: room CE318): Mondays 2:00-5:00 PM Section B (experiment: room CE318): Wednesdays 2:00- 5:00 PM
Credit:	1 unit
Location:	CE Building, Room 318.
Prerequisite(s)	Co-Requisite: CE 343
Textbook and Reference	Michael Kalinski “Soil Mechanics Lab Manual” wiley (Textbook) Budhu M. “Soil mechanics and foundation engineering” wiley, 2010 (Reference)
Course Description	These tests will be performed in the soil lab: Moisture content, Specific gravity, Liquid and plastic limit, Analysis of grain size distribution including both sieve analysis and hydrometer, Hydraulic conductivity test including both constant and falling head tests, One dimensional consolidation test, Direct shear test, Unconfined compressive strength and UU triaxial test. In addition, every meeting time includes a lecture of 30 to 45 minutes that addresses the related theoretical concepts.
Course Objectives	This course is aimed to perform common soil mechanics tests in order to better understand soils behavior. By taking this course, one is expected to be able to run common geotechnical tests, analyze lab test data, and describe mechanical behavior of soils.
Program outcome	To develop an ability to design and conduct experiments, as well as to analyze and interpret data.

Grading Policy: Mid-term exam: 20%
Final exam: 30%
Lab reports and attendance: 40% + 5% = 45%
Peer evaluation at the end of the semester will affect the final grades: 5%
Regular grades are awarded for this course:
90 – 100 = A
80 – 89.9 = B
65 – 79.9 = C
50 – 64.9 = D
< 50 = E

Class Policies: All students are expected to attend all the classes, lectures and laboratory sessions. Students are expected to arrive to class on time and prepared to work. Students absent from lectures and laboratories will be responsible for all material covered during the sessions. Missing more than 2 lectures and 1 lab may result in administrative drop of the class with a grade of E. If you need to be absent from the class with a justifiable reason (sickness, family obligations, jury duties, etc), you must inform the instructor in advance and bring the pertinent certification.

Class Participation: Your active participation in all the laboratories is strongly expected and it will influence your final grade. Each group will perform all the experiments and every member is expected to cooperate during the lab.

Important dates

Classes begin	21-Aug-17
Labor Day - no classes	4-Sept-17
No classes	7-Sept-17
Veterans Day – no classes	10-Nov-17
Thanksgiving recess – no classes	23-26 Nov-17
Last day of class	6-Dec-17
Final exam	13-Dec-17

Assignments Only one submission is required for group reports. Normally, the reports are due **one week** from the date a set of tests are performed unless it is announced in the class. **The reports are required to submit electronically via D2L and also as hard copies.**

Note: If report turned in late, 20% points will be deducted from the actual grade for each late day.

Plagiarism The plagiarism policies within the Student Code of Academic Integrity will be strictly followed:

<http://deanofstudents.arizona.edu/policiesandcodes/codeofacademicintegrity>

Any student found plagiarizing will be failed in the respective lab test or in the course as a whole.

Threatening behavior The general policies against threatening behavior by students will be followed: <http://policy.arizona.edu/threatening-behavior-students>

Remarks Students are required to clean the lab after each experiment.
Students are required to attend for some tests at a different time schedule.
This syllabus may be subject to slight changes in the future with the prior notice.

Work schedule

Group A (Monday)

Week	Date	Activities	Remarks
1	08/21/2017	Moisture content and Specific Gravity	
2	08/28/2017	Liquid and plastic limit	
3	09/04/2017	Labor day	No class
4	09/11/2017	Particle size analysis (sieve+Hydro)	
5	09/18/2017	Soil Classification	
6	09/25/2017	Compaction (standard)	
7	10/02/2017	Compaction (modified)	
8	10/09/2017	Midterm exam	No class
9	10/16/2017	Consolidation test	
9	10/23/2017	Consolidation test (Continued)	
10	10/30/2017	Permeability test-constant head	
11	11/06/2017	Permeability test-falling head	
12	11/13/2017	Direct Shear test	
13	11/20/2017	UC test	
14	11/27/2017	UU test	
15	12/13/2017	Final Exam	No class

Group B (Wednesday)

Week	Date	Activities	Remarks
1	08/23/2017	Moisture content and Specific Gravity	
2	08/30/2017	Liquid and plastic limit	
3	09/06/2017	No class	No class
4	09/13/2017	Particle size analysis (sieve+Hydro)	
5	09/20/2017	Soil Classification	
6	09/27/2017	Compaction (standard)	
7	10/04/2017	Compaction (modified)	
8	10/11/2017	Midterm exam	No class
9	10/18/2017	Consolidation test	
9	10/25/2017	Consolidation test (Continued)	
10	11/01/2017	Permeability test-constant head	
11	11/08/2017	Permeability test-falling head	
12	11/15/2017	Direct Shear test	
13	11/22/2017	UC test	
14	11/29/2017	UU test	
15	12/13/2017	Final Exam	No class

Guide to Laboratory Work and Reports

Laboratory reports:

This short guide seeks to standardize your reports following Style for all the Department's Laboratories. Paragraph headings provide a framework for the structure of the report and the text underneath them covers the main aspects that will mostly satisfy the requirements. The numbers in parenthesis shows the points for that paragraph.

CE 349: Soils Laboratory Report

Memorandum

To: Arash Nikvar Hassani
From: Your group number
Lab Partners: Name of members of the group
Date: August 21th, 2017

Subject: Laboratory Report on (subject), CE 349, The University of Arizona.

(5) **Objective:** State clearly the purpose for the laboratory investigation.

(5) **Apparatus:** List and describe the tools and apparatus together with a sketch (if applicable)

(15) **Test Procedure:** Refer to a standard test procedure (if one was followed i.e. ASTM standard) and indicate modifications, if any. You **MUST** write the procedure in first person and write in your own words. You are **REQUIRED** to read the ASTM standard pertaining to the experiment and report any discrepancy that were made from the ASTM standard in performing the test.

(5) **Remarks:** Discuss briefly any test problems, discrepancies, test errors, mistakes, etc. In short, any factors which you believe may have affected the results. Comment on the reliability of the results and how it can be improved next time.

(20) **Test Results:** Give numerical results including numbers and or graphs. You may want to attach graphs as a figures saying: Figure 1 and referring to it in the body of the text. The point is to present the results, describe any trends, but do not make generalizations at this point. Only present the results.

(25) **Conclusions:** Now that the results are presented, what do they mean? Be concise, but complete. This is not a summary but it is a conclusion of the results: what they mean, and what is the answer to the question that was the reason for the laboratory work in the first place. Make sure you include elements of the theoretical background was covered during the Lecture. Indicate which equations have been utilized to compare the theoretical values with the measured during the experiment.

The following are examples of poor conclusions:

“The overall objectives of this laboratory experiment were met. The readings were performed on time and correctly. The procedure for our group was over seen by the laboratory assistant and all of our questions were answered immediately leading to an accurate and prompt completion of the laboratory...”

“The results seem reasonable...” If you state this you had better state to which reference the comparison is being made.

(5) **References:** List references used.

(20) **Appendices:** Include raw data, detailed calculations and any other material that is pertinent to the readers and documentation of the laboratory work completed. The calculations do not need to be typed in a text editor (But should be clear enough to follow your work). All group members **MUST** submit individual calculations.