

Course	CE 38100 – Soil Mechanics Laboratory
Type of Course	Required for Civil Engineering Program
Catalog Description	Performing various laboratory tests to determine the characteristics and mechanical properties of soil according to the procedures and standards set by the American Society for Testing and Materials (ASTM).
Credits	1
Contact Hours	3
Prerequisite Courses	None
Corequisite Courses	CE 38000 – Soil Mechanics
Prerequisites by Topics	None
Textbook	Prof. Krishna Reddy, “Engineering Properties of Soils Based on Laboratory Testing.” Department of Civil and Materials Engineering, University of Illinois at Chicago. http://www.uic.edu/classes/cemm/cemmlab/
Supplemental Materials	Annual Book of ASTM Standards; American Society for Testing and Materials. Recent copies are in placed in the reference section in Walter E. Helmke Library
Course Objectives	Students will able to identify physical and mechanical properties of soil in the field and laboratory settings. Student will be familiar with ASTM laboratory test standards and procedures. This include preparing soil samples for testing, performing the test, collecting and analyzing data, interpreting the results and writing technical reports.
Course Outcomes	Students who successfully complete this course will be able to: <ol style="list-style-type: none">1. Perform common soil tests to identify physical and mechanical properties of soils. [5, 6]2. Be familiar with soil mechanics tests and determines which test is needed in designing civil engineering projects and/or solving engineering problems. [1, 6, 7]

3. Prepare soil samples for testing, performing the test, collecting and analyzing data according to ASTM. [6, 7]
4. Apply the laboratory results to problem identification, quantification, and basic soil mechanics related design problem. [2, 6, 7]
5. Demonstrate the ability to write clear technical lab reports. [3, 5]
6. Use word processors and other modern software packages in writing and finishing the report. [3, 7]
7. Demonstrate the ability to work in groups. [5]
8. Understand and apply ethical issues associated with decision making and professional conduct in the lab and field environment. [4]

6. Lecture Topics

1. Orientation, introduction, lab safety, sampling procedure
2. Moisture Content Determination
3. Organic Matter (Content)
4. Unit Weight (Density)
5. Specific Gravity of Soil Solids
6. Atterberg Limits
7. Grain Size Distribution- Sieve Analysis
8. Grain Size Distribution- Hydrometer Analysis
9. Moisture-Density Relationship (Compaction Test)
10. Hydraulic Conductivity- Constant Head Method
11. Basic Classification of Rocks- Geology Lab.
12. Demonstration of In-Place Soil Density
13. Demonstration of other lab such as Boring Logs and Soil Profiles Preparation.
14. Final Exam

Computer Usage

Medium

Laboratory Experience

High

Design Experience

Low

Coordinator

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Date

July 1, 2018