University of Tennessee at Chattanooga
College of Engineering and Computer Science
ENCE 3610L - Soil Mechanics Laboratory (1)
24126—Spring 2017
T 1150-1430, EMCS 102

Catalog Description
Students in small teams perform hands-on experiments that are designed to illuminate fundamental soil mechanics concepts that are introduced in the lectures. Laboratory exercises include particle size distribution, Atterberg limits, soil classification, water content, consolidation test, permeability tests, compaction tests, procedures, analysis, and sampling practices. Spring semester. Laboratory 3 hours. Prerequisites: ENGR 2460 and ENGR 2460L with minimum grades of C. Corequisite: ENCE 3610. Laboratory/studio course fee will be assessed. Supplementary course fee assessed.

Instructor
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Textbook
1. Department of the Army. *Materials Testing*. FM 5-530. Washington, DC: Department of the Army, 1987.

Course Objectives (numbers in parentheses indicate relationship to civil engineering program outcomes, given at end of syllabus)
At the completion of the course, students will have demonstrated the ability to:

- ✓ Perform tests on disturbed samples. Examples of these tests include Atterberg and Proctor tests, sieve and hydrometer tests, and ancillary tests. (2)
- ✓ Perform tests on undisturbed samples. Examples of these tests include permeability tests, consolidation tests, unconfined compression tests, and triaxial tests. (2)
- ✓ Using data taken either directly from disturbed tests or other sources, determine soil classification using the Unified or AASHTO system. (5)

Laboratory Tests
1. RQD (Rock Quality)
2. Water Content
3. Specific Gravity
4. Gradation (Sieve and Hydrometer Analysis)
5. Atterberg (Liquid and Plastic) Limits
6. Proctor Compaction Test (Standard and/or Modified)
7. Unconfined Compression Test
8. Dual Cone Penetrometer (DCP) Test
9. Sand Cone Test

Evaluation
- ✓ Nine (9) Laboratory Test Reports @ 10% = 90%
- ✓ One (1) Laboratory Test Design Report @ 10% = 10%

Course Policies
- ➢ Unless otherwise specified, laboratory report is due at the lab session following the test. No late reports shall be accepted.
- ➢ Some laboratory reports will be conducted in groups, others individually, and others

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done in groups with individual reporting. For true group projects, the report will be submitted as a group.

- All reports will be submitted via UTC Learn in pdf data format. *No other submission will be accepted.* All reports are subject to review by SafeAssign; this can have an effect on your grade.
- All laboratory and project reports to be submitted in conformance with the report format requirements in force.
- Letter Grading System:
  - 90 – 100: A
  - 80 – 90: B
  - 70 – 80: C
  - 60 – 70: D
  - < 60: F
- Attendance is required with the exception of special arrangements made before class as the only excused absences.
- All students must acknowledge the Laboratory Safety Agreement, which is done on UTC Learn. Failure to do so will result in an incomplete until it is done.
- You are studying now so that you may enter and practice the engineering profession later. The engineering profession is highly regarded by the public because those who practice it do so with ethical and social consciousness. The same is expected of students in this course. Any direct copying of other students' work will be considered a violation of the honor code and a course grade of "F" will be given.

Student Outcome Objectives

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. An ability to function on multidisciplinary teams
5. An ability to identify, formulate, and solve engineering problems
6. An understanding of professional and ethical responsibility
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. A knowledge of contemporary issues
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.