

SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLOGIES AND SKILLED TRADES DIVISION
Land Surveying/GIS/Civil Engineering Technology Program
Revision Date: August 2025

I. CATALOG DESCRIPTION

Course Number: LSCE1230
Course Title: Earthworks Inspection
Prerequisite(s): None
Catalog Description: Study of properties of soils affecting the ability to support structures such as bridges, highways, and building sites. Inspector's duties are studied regarding his/her function to ensure that a quality foundation or embankment is constructed. Areas of study include compaction, soil types, basic geology, and density, and moisture of soils used in construction.
Credit Hours: 3
Class Hours: 45
Lab Hours: 0
Total Contact Hours: 45

II. COURSE OBJECTIVES: *Course will:*

- A. Assist in the step-by-step instructions for conducting many of the frequently used soil laboratory and site procedures of soil mechanics.
- B. Meet the needs of students in a lecture environment in which the evaluation of soil conditions and the use of soil can be used for construction material.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Define the term geotechnical engineer.
 - 2. Describe the characteristics of a quality testing laboratory.
 - 3. List the five steps of the scientific approach to the study of soils.
 - 4. Determine what constitutes an undisturbed soil sample.
 - 5. Explain the ASTM method for using a microwave oven soil moisture test.
 - 6. Determine how the standard and the modified Proctor tests differ.
 - 7. Describe the graph used in determining the optimum moisture density of soil.
 - 8. Determine how shear strength of a soil is developed.
 - 9. Discuss the relationships of direct shear tests on simulated soil loads.
 - 10. Compare published standards of hand operated vane shear test for ASTM and ASSHTO.
 - 11. List factors taken into consideration, measured and reported during data collection of the permeability test.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
Outcome 1: Collect, identify, interpret and analyze data.

IV. CONTENT/TOPICAL OUTLINE

- A. Soil Mechanics & Sampling
- B. Particle Size & Moisture Content
- C. Compaction & Atterberg Limits
- D. Compression & Shear Strength
- E. Consolidation, Permeability & Percolation

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): Roberts, Jack, *Understanding Soil Mechanics*, 1996, Delmar Publishers (Provided by Program)
- B. Other Resource(s):
- C. Supplies: HP35s Calculator

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lectures
 - 2. Classroom demonstrations
 - 3. Classroom discussions
 - 4. Instructional handouts
 - 5. Video presentations
 - 6. PowerPoint presentations
 - 7. Speaker(s)
 - 8. Field Trip(s)

VII. METHODS OF EVALUATION

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1. Assignment Sheets
 - 2. Tests
 - a. Follows each assignment sheet
 - b. Number of correct answers
 - c. Legibility of hand writing (neatness)
 - 3. Participation (10% of final grade) Participation is necessary for success. Participation will play a role in a student's final course grade.

VIII. SPECIFIC COURSE REQUIREMENTS

- A. A minimum grade of "C" or higher is required in all courses designated or starting with LSCE to progress through or graduate from the program.