

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: LSCE1220
Course Title: Engineering Surveying
Prerequisite(s): LSCE1120
Corequisite(s): LSCE1130
Catalog Description: Studies related to surveying as carried out in traversing, traverse computations, area and volume. Measuring horizontal and vertical angles using a variety of different instruments and readouts. Solving practical surveying problems using basic trigonometry. Field notes forms. Safety practices. Continuation of study and application of surveying mathematics.
Credit Hours: 3.0
Class Hours: 23
Lab Hours: 68
Total Contact Hours: 91

II. COURSE OBJECTIVES: *Course will:*

- A. Survey a traverse with a high degree of accuracy and minimal misclosure.
- B. Distinguish the difference between horizontal and vertical curves.
- C. Solve all land surveying computations that pertain to traversing.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. List advantages and disadvantages of the total station.
 - 2. Describe the process for measuring angles with a total station.
 - 3. Describe the process for measuring distances with a total station.
 - 4. Describe the process for measuring remote elevations and the distance between two points with a total station.
 - 5. Identify the types of traverses commonly used in surveying.
 - 6. Arrange in order the nine primary steps taken when computing a traverse closure.
 - 7. Calculate the sum of the interior angles of a closed-polygon traverse give a various number of sides.
 - 8. Calculate the angular misclosure of a polygon that has a various number of sides.
 - 9. Compute linear misclosure.
 - 10. Compute the area enclosed for any polygon.
 - 11. Calculate by coordinates the area within a traverse.
 - 12. Compute the section areas using the coordinate methods.
 - 13. Compute traverse closure and adjustment by the compass rule.
 - 14. Calculate area of a closed traverse by the coordinate method.
 - 15. Set up a total station over a desired point.
 - 16. Measure and read angles in the field.
- 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. Unit 1 Angle Measurements – Chapter #8 Pt.2
- B. Unit 2 Traversing – Chapter #9
- C. Unit 3 Traverse Computations – Chapter #10
- D. Unit 4 Area – Chapter #12
- E. Unit 5 Volume – Chapter #26

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): Wolf and Ghilani, *Elementary Surveying*, Current Edition
- B. Other Resources: Handouts supplied by instructor when required.
- C. Supplies: Scientific calculator/Drafting tools when required.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lecture
 - 2. Classroom discussion
 - 3. Videos
 - 4. Demonstration
 - 5. Instructional handouts

VII. METHODS OF EVALUATION

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1. Assignment Worksheets
 - 2. Tests
 - 3. Participation
 - 4. Evaluation will be based on the number of points earned from the total points possible.

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.