

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Land Surveying/GIS/Civil Engineering Technology Program
Revision Date: August 22, 2022

I. CATALOG DESCRIPTION

Course Number: LSCE1130
Course Title: Analysis for Land Surveyors
Prerequisite(s): None
Catalog Description: This is a course that analyses the basic structure for the land surveying technician in the following areas: Field Data Acquisition to include taping, Electronic Distance Measurement, Leveling and Compass surveying. This course also includes plane surveying to include the basic knowledge of traversing, area of a traverse, partitioning of land, horizontal curves, and vertical curves.
Credit Hours: 3
Class Hours: 45
Lab Hours: 0
Total Contact Hours: 45

II. COURSE OBJECTIVES: *Course will:*

- A. Describe the different types of traverses along with computation of bearings of a closed traverse, convert bearings to azimuths and azimuths to bearings, compute latitudes and departures using azimuths, and balancing the traverse.
- B. Describe the double meridian distance (DMD) method to compute the area of a traverse.
- C. Compute the area of a tract using the formulas of a triangle.
- D. Compute the area of a tract using the trapezoidal rule.
- E. Describe the correct methods in determining the geometry of a horizontal curve.
- F. Describe the correct method in determining the geometry of a vertical curve.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Measure horizontal angles.
 - 2. Calculate deflection angles.
 - 3. Compute the closure for a polygon.
 - 4. Define the bearing of a line.
 - 5. Demonstrate the use of azimuths.
 - 6. Convert azimuth to bearing.
 - 7. Interpret latitudes and departures.
 - 8. Compute the error of closure.
 - 9. Divide a tract of land by a line between two points.
 - 10. Divide an irregular tract into two equal parts.
 - 11. Define simple horizontal curves.
 - 12. Explain the field procedure in staking a simple curve.
 - 13. Partition a tract of land using the length and bearing of one side unknown (the cutoff line).
 - 14. Partition a tract of land using the lengths of two sides unknown.
 - 15. Partition a tract of land using the bearings of two sides unknown.
 - 16. Partition a tract of land using the bearing of one side and length of another side unknown.

17. Partition a tract of land when areas are cut off by a line between two points on the perimeter.
18. Partition a tract of land when areas are cut off by a line in a given direction from a point on the perimeter.
- B. General Education Learning Outcomes (GELOs)
 1. GELO #3: Critical Thinking & Problem Solving
Outcome 1: Collect, identify, interpret and analyze data.
 2. GELO #3: Critical Thinking & Problem Solving
Outcome 2: Synthesize information to arrive at reasoned solutions to problems.

IV. CONTENT/TOPICAL OUTLINE

- A. Unit 1 Field Data Acquisition/Basic Mathematic Computations
- B. Unit 2 Traverse
- C. Unit 3 Area of a Traverse
- D. Unit 4 Partitioning of Land
- E. Unit 5 Horizontal Curves
- F. Unit 6 Vertical Alignment

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
 1. George M. Cole, *PPI Surveyor Reference Manual*, (Refer to CID and/or instructor for current edition)
 2. D'zign, *Surveying Solutions Book for the HP35s*
- B. Other Resources: Handouts supplied by instructor when required
- C. Supplies: HP35s 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.