

CATALOG INFORMATION

Dept and Nbr: SURV 50

Title: INTRO PLANE SURVEYING

Full Title: Introduction to Plane Surveying

Last Reviewed: 4/13/2015

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	17.5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: CEST 50A

**Catalog Description:**  
Introduction to the principles and practice of plane surveying, including measurements for distance, direction, elevation and position, topographic and planimetric mapping, use and care of surveying equipment.

**Prerequisites/Corequisites:**

**Recommended Preparation:**  
Course Completion of APTECH 90A ( or CET 90A) OR Course Completion of MATH 155

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: Introduction to the principles and practice of plane surveying, including measurements for distance, direction, elevation and position, topographic and planimetric mapping, use and care of surveying equipment. (Grade Only)  
Prerequisites/Corequisites:  
Recommended: Course Completion of APTECH 90A ( or CET 90A) OR Course Completion of MATH 155

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>			Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>			Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>			Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:	Fall 2017
<b>UC Transfer:</b>		Effective:		Inactive:	

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon successful completion of this course, the student will be able to:

1. Summarize the proper procedures and use of surveying equipment.
2. Prepare proper surveying notes and information.
3. Perform complex surveying computations involving angles, directions, distances, areas, and volumes, vertical and horizontal positions.
4. Calculate the proper method to determine horizontal measurements by taping, total stations and recorded surveying data.
5. Define the different types of surveying and their uses.
6. Determine the difference in elevation between points by the correct leveling process.
7. Layout, measure, analyze and adjust level runs, field traverses and topographic mapping.
8. Compute direction of a line from field data and record data using magnetic and geodetic information.
9. Compute the relative position of points by traversing.
10. Prepare a topographic map from surveying data and information.

### **Topics and Scope:**

Lecture and Laboratory

I. Introduction to Plane Surveying

A. Procedures

B. Equipment

C. Field Notes

II. Units of Measure and Significant figures

III. Preparation and use of Field Notes

IV. Theory of Errors

V. Distance Measurement

- A. Methods
- B. Taping
- C. Electronic
- VI. Leveling
  - A. Theory
  - B. Equipment
  - C. Process
  - D. Computations
- VII. Angles, Bearings and Azimuths
- VIII. Total Station Instruments and measurements
- IX. Construction and Layout Surveys
- X. Traversing
  - A. Procedures
  - B. Computations
- XI. Computing Area
- XII. Mapping Surveys
- XIII. Mapping

### **Assignment:**

1. Determine the distance between points by Estimation and Pacing
2. Determine the distance between points by Taping.
3. Set up and operating Auto levels and leveling rods.
4. Determine the elevation of points by differential leveling procedures.
5. Determine the elevation of points by Bench Leveling.
6. Determine the elevation of points along an alignment by Profile Leveling.
7. Determine the elevation of points at specific stations along an alignment by Cross-section Leveling.
8. Set up, and operate electronic Total Stations and prism rods.
9. Angle Measurements - Measuring horizontal and vertical angles of a closed polygon.
10. Angle Measurements - Setting points and Building Layout.
11. Angle and distance measurements by Traversing.
12. Determine the position of points of a traversing and side shots of that traverse.
13. Perform a topographic survey.
14. Prepare a topographic map from survey data.
15. Lab report (2 pages) submitted for assignments 1-14.
16. Five exams (including the final).
17. Chapter reading assignments from text. Approx. 50 pages per week.
18. Homework problems from text. Approx. 10 problems per week.

### **Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Field work, Lab reports

Problem solving  
15 - 25%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Field work, Performance exams

Skill Demonstrations  
30 - 40%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion, COMPUTATIONAL

Exams  
25 - 35%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Class Participation

Other Category  
0 - 10%

### **Representative Textbooks and Materials:**

Elementary Surveying: An Introduction to Geomatics, 10th ed. Wolf/Ghilani, PrenticeHall, 2002.