

CATALOG INFORMATION

Dept and Nbr: CET 55

Title: CONTROL/ASTRONOMY

Full Title: Applications of Control and Astronomy Surveys

Last Reviewed: 8/23/2004

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	3.00	8	Lecture Scheduled	24.00
Minimum	2.00	Lab Scheduled	3.00	8	Lab Scheduled	24.00
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	48.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 48.00

Total Student Learning Hours: 96.00

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:

**Catalog Description:**  
Application and adjustments of control surveys, map projections and state plan coordinates including methods of astronomical observation and calculations related to surveying.

**Prerequisites/Corequisites:**  
CET 53 or equivalent with a "C" or better.

**Recommended Preparation:**

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: Preq: CET 53 or equivalent with a "C" or better. Application & adjustments of control surveys, map projections & state plan coordinates including methods of astronomical observation & calculations related to surveying. (Grade only) COURSE RENUMBERED TO CEST 55 - 94/95. (Grade Only)  
Prerequisites/Corequisites: CET 53 or equivalent with a "C" or better.  
Recommended:  
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 2011
<b>UC Transfer:</b>		Effective:		Inactive:	

### **CID:**

**Certificate/Major Applicable:**  
Certificate Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

The student will:

1. Identify the classes of triangulation, trilateration and traverse control surveys.
2. Identify types of control surveys and their applications.
3. When given the appropriate data adjust any given horizontal control survey.
4. Using appropriate field procedures, complete a horizontal control survey by triangulation, trilateration and traverse.
5. Define and give an illustrative example of the two map projects used for state plane coordinates.
6. When given the appropriate data, determine the geographic coordinates to plane coordinates and the grid azimuth on Lambert Conformal Projection.
7. Determine the plane coordinates and grid azimuth between adjacent state plane coordinate zones.
8. Determine the direction of a line of Solar and Polaris observation.

### **Topics and Scope:**

1. Types and classes of horizontal control surveys.
2. Horizontal control figures, strength of figures, distance and angle adjustments.
3. Computation of lines, angles and plane coordinates.
4. Field procedures for horizontal and vertical control surveys.
5. Map projections and their application to state plane coordinate systems.
6. Use of astronomy for field surveys including field procedures.
7. Determination of latitude and azimuths of line by Solar and Polar observation.

8. Use and application of Global Positioning Systems.
9. Techniques of surveying with GPS in the static mode.

### Assignment:

1. Application and classes of control surveys.
2. Control survey measurements.
3. Adjustments of horizontal and vertical control surveys.
4. Computation of coordinates and intersection for horizontal controls.
5. Applications in surveying with GPS.
6. Application and limits of state plane coordinate systems.
7. Determination of geodetic and grid azimuths.
8. Application and limits using Solar and Polaris observations.
9. Determining latitude and azimuths using Solar and Polaris observations.

### 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.

Field work, Lab reports, Exams

Problem solving  
25 - 35%

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

Field work, Performance exams

Skill Demonstrations  
25 - 45%

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

Multiple choice, Matching items, Completion,  
COMPUTATIONAL

Exams  
15 - 30%

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

None

Other Category  
0 - 0%

### Representative Textbooks and Materials:

Caltrans Survey Manual - California Department of Transportation.  
Surveying; Moffett and Bouchard; Harper Collins 9th Edition