

**SURV 56 Course Outline as of Spring 2009****CATALOG INFORMATION**

Dept and Nbr: SURV 56 Title: INTRO TO GPS

Full Title: Introduction to Global Positioning Systems

Last Reviewed: 12/13/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	17.5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 157.50

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:**

An introduction to the principles and applications of control surveys, coordinate systems, and global positioning systems (GPS) including concepts and practice of navigation, location, data collection, processing and adjustment.

**Prerequisites/Corequisites:**

Course Completion of SURV 50 ( or CEST 50A or CET 50A)

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: An introduction to the principles and applications of control surveys, coordinate systems, and global positioning systems (GPS) including concepts and practice of navigation, location, data collection, processing and adjustment. (Grade Only)

Prerequisites/Corequisites: Course Completion of SURV 50 ( or CEST 50A or CET 50A)

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:
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<b>CSU Transfer:</b>	Transferable	Effective:	Spring 2009	Inactive:
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<b>UC Transfer:</b>		Effective:		Inactive:
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**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. Identify types of control surveys and their applications in civil engineering and surveying.
2. Operate both navigation grade and survey grade GPS equipment for determining location.
3. Use conventional electronic surveying instruments (total stations) as well as the GPS equipment for control surveys, navigation and mapping.
4. Determine and utilize appropriate field procedures for horizontal and vertical control of surveys.
5. Define and give illustrative examples of map projections and their associated data.
6. Determine the geographic coordinates and plane coordinates of points within the two California Coordinate Systems.
7. Determine the direction of a line by Astronomic Observation.
8. Summarize the proper use of electronic surveying equipment such as total stations global positioning systems.
9. Analyze and compile GPS data by using post-processing software.

### **Topics and Scope:**

1. Introduction to GPS
  - a. principles
  - b. applications
  - c. skills
  - d. equipment
2. State plane and geographic coordinate systems
  - a. map projections and datum
  - b. computations
3. Navigating using GPS
  - a. identify sites

- b. locate by different coordinate systems
  
- 4. Planning a survey
  - a. types, including control, topographic and layout
  - b. mission planning
  - c. data gathering
  
- 5. Performing a survey
  - a. observations
  - b. data collection
  - c. recording
  
- 6. Post-processing data
  - a. downloading data into software
  - b. analysis of data
  - c. adjustment of data
  - d. reporting of data
  
- 7. Mapping
  - a. topographic
  - b. planimetric
  - c. photogrammetric control

**Assignment:**

1. Read approximately one chapter of the textbook per week
2. Homework: 6 to 10 problems assigned from textbook or instructor handouts
3. Weekly field exercises including set up and operation of receivers
4. Weekly written lab report
5. Midterm exam
6. Final exam

**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.

Weekly lab reports	Writing 10 - 20%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Field exercises, homework computations; project planning	Problem solving 20 - 30%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Field exercises	Skill Demonstrations 30 - 55%
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**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, matching items, completion, computational, mid-term and final exam

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:**

Introduction to GPS the Global Positioning System, 2nd Ed., 2006, Ahmed El-Rabbany, Artechhouse.