

**CEST 51 Course Outline as of Fall 2014****CATALOG INFORMATION**

Dept and Nbr: CEST 51      Title: CIVIL DRAFTING TECH  
 Full Title: Civil Drafting Technology  
 Last Reviewed: 10/24/2022

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	6	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: CET 51

**Catalog Description:**

Theory and practice of civil engineering drafting and mapping. An introduction to computer-aided design/drafting software for civil engineering, surveying and land development disciplines. Topics include mapping scales and symbols, civil engineering and surveying fundamentals, location and direction of lines, plan, profile, and cross section drawings, topographic mapping, boundary and legal description plats.

**Prerequisites/Corequisites:**

Course Completion of APTECH 46 and SURV 50

**Recommended Preparation:**

Concurrent Enrollment in SURV 51

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

Description: Theory and practice of civil engineering drafting and mapping. An introduction to computer-aided design/drafting software for civil engineering, surveying and land development disciplines. Topics include mapping scales and symbols, civil engineering and surveying fundamentals, location and direction of lines, plan, profile, and cross section drawings,

topographic mapping, boundary and legal description plats. (Grade Only)  
 Prerequisites/Corequisites: Course Completion of APTECH 46 and SURV 50  
 Recommended: Concurrent Enrollment in SURV 51  
 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:
<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. Identify the types of drawings, maps and plats used in civil engineering, surveying and land development.
2. Implement theory of graphical representation in the production of drawings, maps, and plats.
3. Summarize and identify the proper scales, symbols and conventions for drawings, maps and plats.
4. Relate appropriate surveying methods to the creation of drawings, maps and plats.
5. Create plan, profile and cross section views from survey data using civil engineering, surveying and land development software.
6. Prepare and interpret legal descriptions of properties.
7. Develop highway designs and generate highway design documents.
8. Prepare topographic maps from survey data and information.

### **Topics and Scope:**

#### **I. Introduction to Civil Drafting Technology**

##### **A. Theory of graphical representation in civil engineering, surveying, and development projects**

1. scale
2. symbol
3. convention
4. orientation
5. display

##### **B. Types of maps and drawings used in civil engineering**

##### **C. Mapping requirements**

- D. Civil drafting techniques
- E. Intro to CAD
- II. Mapping Scales and Symbols
  - A. Numerical scale
  - B. Graphic scales
  - C. Verbal scale
  - D. Metric scales
  - E. Civil engineering symbols
  - F. Civil engineering line types
  - G. Civil engineering text types
- III. Surveying Fundamentals in Civil Drafting
  - A. Earth's geometry
  - B. Elevation measurements
  - C. Distance measurements
  - D. Angular measurements
- IV. Location and Direction of Lines
  - A. By state plane coordinates
  - B. By latitude and longitude
- V. Contours
  - A. From field data
  - B. Building a surface
- VI. Profiles and Cross sections
  - A. From a surface
  - B. From a file
  - C. From field notes
- VII. Highway Layout
  - A. Tangents
  - B. Horizontal curves - simple, compound and reverse
  - C. Vertical curves - sag and summit
  - D. Layout
  - E. Stationing
- VIII. Earthwork
  - A. Cross sectional area
  - B. Volumes by average end methods
- IX. Legal Descriptions and Plot Plans
  - A. Types of legal descriptions
  - B. Elements of a legal description
  - C. Interpreting legal writings
  - D. Plotting legal descriptions and plot plans

### **Assignment:**

1. Read approximately one chapter of the textbook per week
2. Homework: 6 to 10 problems per week assigned from textbook or instructor handouts
3. Weekly lab assignments using CAD technology
4. Midterms: 4
5. 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.

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

Problem solving  
15 - 25%

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

Drawing and other assignments using CAD technology

Skill Demonstrations  
40 - 50%

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

Multiple choice, Matching items, Completion, Computational, CAD problems

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:**

Civil Drafting Technology, 7th edition. Madsen/Shumaker. Prentice Hall, 2010.