

**CEST 85 Course Outline as of Fall 2023****CATALOG INFORMATION**

Dept and Nbr: CEST 85 Title: CADD CIVIL SURV LAND DEV

Full Title: CADD for Civil, Surveying and Land Development

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 85

**Catalog Description:**

In this course students will be introduced to Computer-aided Drafting and Design (CADD) for civil engineering, surveying, and land development technicians. Industry standard civil engineering software application will be utilized in this course. Areas covered include input of surveying data for boundary and topography, creation of a digital terrain model, roadway alignments, earthwork, grading plans, plan view, profile view and cross section drawings as they relate to the professions of civil engineering, land surveying, and land development.

**Prerequisites/Corequisites:**

Course Completion of CEST 51

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

Description: In this course students will be introduced to Computer-aided Drafting and Design (CADD) for civil engineering, surveying, and land development technicians. Industry standard civil engineering software application will be utilized in this course. Areas covered include input

of surveying data for boundary and topography, creation of a digital terrain model, roadway alignments, earthwork, grading plans, plan view, profile view and cross section drawings as they relate to the professions of civil engineering, land surveying, and land development. (Grade Only)

Prerequisites/Corequisites: Course Completion of CEST 51

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 1995	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Use three-dimensional (3D) civil engineering software to generate technical drawings and design documentation
2. Generate digital terrain surface models from survey data
3. Create parcel boundaries and data for subdivisions
4. Create horizontal and vertical alignments for roadways

### **Objectives:**

At the conclusion of this course, the student should be able to:

1. Create, edit, and manage point data including importing and exporting
2. Create and properly label lines and curves for civil engineering projects
3. Perform basic subdivision computations for area and boundary information
4. Create a digital terrain model surface of the existing ground from point, contour, fault line, and break line data
5. Create a finished grade or design surface
6. Create, label, and edit contours from digital terrain model surface data
7. Create horizontal and vertical alignments for roadways
8. Create profiles and cross sections of roadways from alignments or survey data
9. Draw and define roadway assemblies
10. Compute earthwork volumes using alignments, profiles, cross sections, and corridors
11. Use civil engineering software to create a set of improvement plans, including plan, profile, cross sections, and details

## **Topics and Scope:**

### Lecture-Related Topics and Scope:

- I. An Overview of CADD in Civil Engineering, Surveying, and Land Development
- II. Drawing Setup
- III. Creating and Managing Points, Lines, Labels, Curves, and Tables
- IV. Parcel Computations and Labeling
- V. Terrain Surface Modeling and Contours
- VI. Creating Alignments with Stationing
- VII. Creating Profile and Cross Section Views
- VIII. Volume Computations
- IX. Creating Assemblies
- X. Creating Improvement Plans for Civil Engineering and Land Development Projects

### Laboratory-Related Topics and Scope:

#### Instructor Provided Lab Exercises Using AutoDesk Civil 3D (C3D) Software Application

- I. C3D User Interface
- II. Basic Techniques
- III. Working with C3D Points
- IV. Lines and Curves (AutoCAD vs. C3D)
- V. Setting Styles
- VI. Parcels
- VII. Surfaces
- VIII. Grade(s), Grading, and Grading Groups
- IX. Shortcuts and X-refs
- X. Alignments
- XI. Profiles
- XII. Assemblies
- XIII. Corridors
- XIV. Cross sections
- XV. Pipes
- XVI. Plan Production Tools
- XVII. Civil Survey Tools Add-on Pack

## **Assignment:**

### Lecture-Related Assignments:

1. Weekly textbook chapter readings (1-2)

### Lab-Related Assignments:

1. Lab exercises using CADD technology (10-17)

### Lecture and Lab-Related Assignments:

1. Analysis and computation assignments (3-6)
2. Quizzes (4-8)
3. Exam(s) (1-2)
4. 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.

Analysis and computational assignments

Problem solving  
10 - 25%

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

Lab exercises using CADD technology

Skill Demonstrations  
40 - 60%

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

Quizzes; exam(s); final exam

Exams  
30 - 50%

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

None

Other Category  
0 - 0%

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

An Introduction to Civil 3D. Coleman, Geoffrey J. SDC Publications. 2014 (classic).  
Mastering AutoCAD Civil 3D 2016 Davenport, Cyndy and Voiculescu, Ishka. Sybex Publications. 2015 (classic).