

# **Computer-Aided Drafting and Design (CADD) for Civil Engineering, Surveying, & Land Development Technicians using AutoCAD Civil 3D**

## **CEST 85, Section 5664 – Spring 2017 Course Syllabus**

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### **Course Goal**

The primary goal of this class is for students to acquire a fundamental knowledge of the software used by Civil Engineering and Land Surveying Technicians to map terrain and prepare construction drawings. This class will provide a general understanding of the more common elements used in the Civil 3D software.

As a class, students will be exposed to the concepts identified in the "course outcome" area below. Upon completion of the course, students are not expected to be Civil 3D experts, but they will have acquired a fundamental knowledge of the software. This course is intended to establish a foundation which students can use to broaden their knowledge of AutoCAD Civil 3D.

### **Course Outcome**

- Understand the AutoCAD Civil 3D interface
- Start and setup a new drawing, or open an existing drawing utilizing Civil 3D
- Create, edit, and manage points
- Import and export point data from field surveys and external files
- Create and properly label lines and curves for civil engineering projects
- Perform subdivision computations for area and boundary information
- Create a digital terrain model surface of the existing ground from point, contour, and break line data
- Create a finish grade or design surface
- Create, label, and edit contours from digital terrain model surface data
- Create horizontal and vertical alignments for roadways
- Create profiles and cross sections of roadways from alignments or survey data
- Create and define roadway assemblies
- Compute earthwork volumes using alignments, profiles, cross sections and corridors
- Create a set of improvement plans, including plan, profile, cross sections, and details using Civil 3D

### **Student Learning Outcomes**

Upon completion of this course, students will be able to:

- Use Civil 3D software to generate technical drawings and design documentation
- Input survey data, such as points, for boundary and topographical mapping
- Generate digital terrain model surface
- Create parcel boundaries and data for subdivisions
- Create horizontal and vertical alignments for roadways

### **Course Prerequisites**

CEST 51 (Civil Drafting Technology) with a grade of "C" or better, or equivalent

- Requires APTECH 46 (Introduction to Computer-Aided Drafting using AutoCAD) with a grade of "C" or better, and SURV 50 or SURV 60 (Introduction to Plane Surveying) with a grade of "C" or better

### **Other Recommended Prerequisites**

Students are required to be relatively proficient with the following AutoCAD topics before taking this class:

- Opening and Saving Files
- Creating and manipulating Layers
- Drawing Lines, Arcs, and Polylines
- Erasing, Trimming, and Extending Lines and Objects
- Creating and using Text Styles
- Creating and using Blocks

### Course Schedule

- Tuesdays and Thursdays from 5:00PM to 7:30PM
- Classes held in Shuhaw Hall, RM 1751 (CAD Lab) on the Santa Rosa Campus
- Dates: 1/17-5/18
- Final Exam Date: 5/23/2017. Tentative time of exam: 4:00PM to 6:45PM. The final exam is mandatory.

### Required Reading Materials

- Required reading material will be provided by the instructor through the student portal.

### Additional Outside Reading Materials (Recommended but not required)

- [Mastering AutoCAD Civil 3D 2016, Autodesk Official Press](#), by Cyndy Davenport and Ishka Voiculescu

### Other Materials

- Laptop computers and similar devices are not allowed to be connected to the network unless prior arrangements have been made with the network administrator and the department coordinator. Written authorization will be required in the form of an email.

### Attendance

- Students are expected to attend all sessions of the course which they are enrolled. A student may be dropped if they miss more than 10% of the total class time (including lab), as this constitutes excessive absence for the course.

### Tentative Course Schedule

- The objective of the course schedule is to assist you in planning your schedule. Every effort will be made to stay on schedule. However, the instructor may find it necessary to make appropriate adjustments to meet the learning objectives for the entire class.

### Student Evaluations

- Graded Assignment files and Computer Examinations will be evaluated on the computer unless instructed otherwise. Assignments need to be completed no later than 10 minutes after the initial hour of the class following their assigned date, unless otherwise instructed. Late assignments will be docked 20% for each late class and will not be accepted after the second late class.
- Exams and quizzes will be administered in either computer and/or written hard copy format at the instructor's discretion. Makeup exams and makeup quizzes are generally not given, but may be considered under specific circumstances.
- Students are required to plot their project on 24"x36" sheets and submit a final product to the instructor in accordance with the Tentative Course Schedule, unless otherwise instructed.
- Course grading distribution:

	Points Each	Percentage of Grade	Anticipated Quantity
Graded Assignments:	10	35%	8
Announced Written Quizzes:	10	20%	7
Project:	100	20%	1
Final Examination:	100	25%	1
<b>Course Total:</b>		<b>100%</b>	

Note: Approximately 20 assignments are required to be completed by the students. A minimum of 8 assignments will be randomly selected by the instructor and graded.

- A course grade based on the preceding will be given on the following scale:

A = 90%-100%  
B = 80%-89%  
C = 70%-79%  
D = 60%-69%  
F = Below 60%

### Communications

- If you need to get in touch with me, I can be reached at the email address [jlooper@santarosa.edu](mailto:jlooper@santarosa.edu). Please include "CEST 85" in the subject line of the email.

### Office Hours

- Office hours are from 4:30PM to 5:00PM on Tuesdays and Thursdays in Shuhaw Hall, RM 1751 (CAD Lab), where classes are held. Please visit my [website](#) for more information.

### Class Preparation

Access to a computer with Civil 3D 2015 installed is key to passing this course. If students require additional time beyond the allocated lab time to complete their assignments, there will be scheduled open lab hours posted outside Shuhaw Hall 1751 and 1799 after the first week of classes. Autodesk provides a free student download of the Educational version of Civil 3D 2015 so that students with home computers or laptops will be able to work at home, outside of class hours. The software is available here: <http://www.autodesk.com/education/free-software/autocad-civil-3d>. Due to serious drawing file compatibility issues, be certain to select the 2015 version, even though 2016 is available. All students should be proficient in software installations, file management, and correctly transferring class data to and from their own USB drives. Your instructor is not your personal IT consultant.

***Please note that downloading the software onto your own PC is not a substitute for attending the lab portion of the class. The SRJC attendance policy will be strictly enforced.***

It is the student's responsibility to consult the SRJC web-based information listed below -- please do so, they are considered parts of this syllabus:

SRJC Academic Schedules & Calendar to identify all important dates, deadlines and academic policies such as those relating to unexcused absences, adding and dropping classes.

<https://classes.santarosa.edu/>

<http://admissions.santarosa.edu/academic-calendar/>

- SRJC Rights & Responsibilities: <https://studentlife.santarosa.edu/rights-and-responsibilities>
- SRJC Disability Resources: <http://drd.santarosa.edu/>
- SRJC Student Services: <https://student-services.santarosa.edu/>
- SRJC Academic Program Information: <https://www.santarosa.edu/academics/>

### Class Conduct & Courtesy

During lectures, students should be listening to the presentation. Students shall refrain from having conversations, checking your email or web-browsing. These behaviors are distracting to others and to the instructor. **No student is allowed to print or plot during any lecture under any circumstances.** This includes visiting students working on course work during other class periods when an instructor may be lecturing. **The above distractions or any disruptive behavior during class is grounds for being excused from class with a loss of that day's work.**

During lab, please remember that other students may have different study habits and priorities than you do. Please speak softly when conversing with other students. Avoid long and/or social (unrelated to class matters) dialog in the computer lab. Take such conversations outside.

### Open Lab

There will be open lab time in Shuhaw Hall Rm 1799 and 1751. A schedule will be posted on the doors to the labs. There may be lab seats available during other courses in progress. When desiring to occupy an empty station during a lecture, students should politely inquire with the instructor prior to just taking a seat. If a student shows up late and you are occupying their seat, you must vacate IMMEDIATELY.

### Cell Phones

Turn cell phone ringtones off and if you must receive a call please go outside during your phone conversation.

### Syllabus Purpose and Disclaimers

This syllabus is an agreement. Continued registration in CEST 85 means that you, the student, agree to the policies and procedures outlined in this document. If some aspect or aspects of the syllabus are unclear to a student, it is their responsibility to inquire regarding that matter at the beginning of the course.