

# CE 4288: Senior Design II

## Department of Civil Engineering

### General Information

Instructor: Jeff Weidner, Ph.D.  
Office: A-222  
Lab: E-214  
Office Phone: (915)-747-6913  
Email: [jweidner@utep.edu](mailto:jweidner@utep.edu)  
Office Hours: By appointment – Schedule at [www.jeffreyweidner.com/schedule](http://www.jeffreyweidner.com/schedule)

Meeting Time and Location: Friday: Business Building 329 - 9:30AM to 11:20AM

Final Exam: None

Course Description: ABET Requirements:  
Students must be prepared for engineering practice through a curriculum culminating in a **major design experience** based on the **knowledge and skills acquired in earlier course work** and incorporating **appropriate engineering standards** and **multiple realistic constraints**.

Expectations: Instructor Expectations: From me you can expect the following:

- I will treat all teams and individuals respectfully and equitably
- I will adhere to this syllabus
- I will assign you the grade that you earn
- I will provide minor instruction on very specific topics as needed
- I will provide access to resources to support your project through the Resource Library
- I will not teach material that should have been covered in a prior course, regardless of how well you felt it was taught, or how well you learned it
- I will make myself available to attempt to address issues that may arise via appointments scheduled through my website listed above
- I will not accept walk-in appointments related to senior design
- I will respond in a timely fashion (within 12 hours generally) to emails and Slack messages (if you elect to use Slack)
- I will not be expected to reply to students immediately

Student Expectations: From you I expect the following:

- You will treat me, the other teams, and your teammates with respect
- You will act in a professional manner at all time
- You will adhere to this syllabus and to your team agreement

- You will apply the knowledge to which you previously should have been exposed. Note that I did not say “that you learned” or something similar.
- You will work to learn new skills as needed in a self-guided manner.
- You will treat my time as valuable, scheduling meetings in advance and coming prepared to ask questions and present proposed solutions
- You will take personal responsibility for the success of your project

Class  
Approach:

Teamwork: In order to meet ABET requirements, Senior Design should prepare you for engineering practice. Unless you are practicing as an engineer on your own (which is impossible prior to full licensure), you will be working in teams. Working successfully in a collaborative environment requires trust and patience in the face of pressure and time constraints. To encourage you explore and understand this dynamic, your deliverables will be graded as a team, not on an individual basis. That said, I understand that it is not uncommon for some team members to carry more of the load than others. This is a graded assignment that reflects personally on your individual performances within your team. As such, there will be a peer evaluation to reflect on each individual’s performance within your team, including your own.

To provide context for these peer evaluations, you will be required to create and sign a team agreement. This agreement will specifically address the following items:

- Scheduled meeting times (I suggest fixed, regular meetings)
- Communication plans (I suggest using Slack)
- Resource plan (I suggest OneDrive for sharing)
- Documentation plan (I suggest using OneNote for meeting notes)
- Grievance plan (I require you to meet internally before coming to me)

This agreement and the products from it should be available to me if I feel they are required to address any issues that arise.

I will utilize Blackboard as a file repository for the class. I will also post grades on Blackboard.

Deliverables: There are three primary deliverables for this class which will be graded. They are the final report, final design drawings, and final client presentation. Each primary deliverable will have interim deliverables, as described in Table 1 below. **You are responsible, as a team, for providing a schedule for submission of those interim deliverables. Your submission of these interim deliverables in a timely fashion will factor into the grading of your final product, but the interim deliverables will not be graded independently.**

**Not all deliverables are relevant for every team because of the variation in the types and scopes of your projects.** I will work on a team to team basis to finalize

the deliverable list. Professionalism and appearance are important to deliverables but will only be evaluated as part of the final submission. When assumptions are required, they must be clearly stated and justified in your final deliverables.

Lecture Periods: The purpose of our lecture period is, first and foremost, an opportunity for you and me to interact and address issues that are arising within your team and your project. I will not take attendance, but I suggest that as part of the documentation plan that notes are taken for each lecture, including team attendance. If you do not attend lecture it is between you and your group to work out, and I expect the results of that to come to bear in the peer evaluations.

I will use lectures, on occasion, to present material that I believe will be beneficial for your project, or I will bring in guest speakers. Anticipated topics include:

- Using Microsoft Word effectively to create a document
- Developing a building program and requirements
- Understanding engineering drawings
- Professionalism

As indicated by the ABET description, your design should be based on your knowledge and skills acquired in prior courses. I understand and hereby recognize that you have not learned everything in prior courses that you need to complete this design. **You are expected to bridge that gap yourself by seeking out resources and guidance.** See the resource library section for additional information.

Resource Library: To help bridge the gap between your existing coursework and the specific design challenges you are facing with this project, I have created a resource library on Blackboard. Here you will find information about design codes and specifications, software resources, textbooks, and local engineers who may be willing to serve as a mentor or advisor. There is guidance for citing references and resources of which you may use. I am also including engineering drawings for several existing projects in the area.

Table 1 - Deliverable Table

Design Category	Interim Deliverable	Date of Submission
Overall	Site plan	
Structures	Floor plan	
	Section with floor/façade detail	
	Structural framing plan	
	Structural framing elevation	
	Structural form selection	
	Load determination - vertical	
	Load determination - lateral	
	Structural design calculations	
Foundation / Geotechnical	Soil Profile	
	Foundation system selection	
	Foundation plan	
	Foundation elevation	
	Foundation design calculations	
Transportation	Transportation plan	
	Multimodal traffic flow diagrams	
	Geometric design calculations	
	Volumetric design calculations	
	Improvements	
Environmental	Stormwater management	
	Vegetation selection	
	Irrigation requirements	
	Green infrastructure	
	Sustainability plan	
Construction Management	Revision of Senior Design 1 Deliverables	
	Final schedule	
	Final cost estimate	

Course Objectives:

By the end of this course you should:

1. Describe the design process for a realistic civil engineering project.
2. Produce professional quality engineering drawings
3. Produce a professional quality engineering report
4. Produce representative professional quality design calculations
5. Demonstrate professional quality presentation skills
6. Use engineering software tools to aid in civil engineering design
7. Interact with local practitioners to get mentoring and support
8. Describe the role of sustainability in civil engineering design

## Class Policies

Honor Code: Students are expected to adhere to the Honor Code of the Department of Civil Engineering, which can be found here (<http://ce.utep.edu/honorcode.htm>). Instances of suspected cheating or other violations of the Honor Code will be handled according to the procedures in the UTEP Handbook of Procedures. Under no circumstances should any design work be completed by anyone outside of your team. Additionally, under no circumstances should a practicing mentor be compensated for their time or assistance.

Attendance Policy: I do not take attendance during class.

Neatness Policy: By this stage in your educational career, you should be submitting work that is neat and professional. I reserve the right to return work unreviewed if I deem it unprofessional. Resubmitted work will be considered late.

## Coursework and Grading Expectations

Grading: Grade Breakdown:

Final Presentation:	25%
Final Report:	25%
Final Design Drawings:	25%
Peer Assessment:	25%

Final Grade Thresholds:  $A \geq 89.5$   
 $89.5 > B \geq 79.5$   
 $79.5 > C \geq 69.5$   
 $69.5 > D \geq 59.5$   
 $59.5 > F$

Exams: There are no exams in this course.

Homework: There is no homework in this course.