

# CE 4188: Senior Design I

## Department of Civil Engineering

### General Information

Instructors:	Jeffrey Weidner, Ph.D. Office: Engineering Annex A-222 Labs: Engineering E-214   IDRB 3.101 Office Phone: (915)-747-6913 Cell Phone: (215) 292-4830 Email: <a href="mailto:jweidner@utep.edu">jweidner@utep.edu</a> By appointment – Schedule at <a href="http://www.jeffreyweidner.com/schedule">www.jeffreyweidner.com/schedule</a>
Meeting Time and Location:	Friday 8:30 AM to 9:20 AM BUSN 331
Final Exam:	None; End of Term Progress Presentation on 11/11/22
Course Description:	ABET Requirements: Students must be prepared for engineering practice through a curriculum culminating in a <b><u>major design experience</u></b> based on the <b><u>knowledge and skills acquired in earlier course work</u></b> and incorporating <b><u>appropriate engineering standards</u></b> and <b><u>multiple realistic constraints</u></b> .
Expectations:	Instructor Expectations: From me, you can expect the following: <ul style="list-style-type: none"><li>• I will treat all teams and individuals respectfully and equitably</li><li>• I will adhere to this syllabus</li><li>• I will assign you the grade that you earn</li><li>• I will provide minor instruction on very specific topics as needed</li><li>• I will provide access to resources to support your project through the Resource Library</li><li>• 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</li><li>• I will make myself available to attempt to address issues that may arise via office hours appointments</li><li>• I will respond within 24 hours to emails and Teams messages</li><li>• I will not be expected to reply to students immediately</li></ul> Student Expectations: From you, we expect the following: <ul style="list-style-type: none"><li>• You will treat me, the other teams, and your teammates with respect</li><li>• You will act in a professional manner at all times</li><li>• You will adhere to this syllabus and to your team agreement</li><li>• You will apply the knowledge to which you previously should have been exposed.</li><li>• You will work to learn new skills as needed in a self-guided manner.</li></ul>

- 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: *Projects and Team Formation:* You will be placed in your team based on the results of a survey to be provided to you at the start of the course. Your team will create a project. Your team will have between four and six members.

*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, we 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.

*Deliverables:*

*Team Agreement:* 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 – layout time for recurring meetings
- Communication plans – establish a preferred approach for communication
- Grievance plan – describe how you will address issues between team members first internally then externally

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

*Team Name:* Your team must create a team name and logo.

*Project Concept:* The theme for projects this year will be centered on improving El Paso. The project that you propose has to fit that theme, and it must be of a large enough scope to meet the requirements of Senior Design at UTEP and our accreditation board, ABET, listed above in the course description. Your project is your decision. You should be able to craft a project that focuses on your area of interest, if you prefer to focus in more depth on one area (e.g., stormwater or transportation design). Conversely, if you want a traditional senior design experience, focus on a building project, which will cover most aspects of civil

engineering. You will submit a short (1 to 2 page) project concept writeup with a descriptive figure explaining your project.

*Midterm Deliverable:* On October 14<sup>th</sup>, 2022, you will submit a preliminary midterm deliverable of a draft progress report. Later in the term, we will conduct a scoping exercise and from that you will include the specifics of what your project is, why you are going to do it, and where it will be. The progress report will demonstrate your understanding of the scope of the project which you laid out in your project concept deliverable (what). You will justify the project using quantitative data of some kind, which you may need to collect (why). Finally, you will describe either through a draft site plan or sketches, where in El Paso your project will be and the extents of the site.

*End of Term Progress Deliverable:* On November 28<sup>th</sup>, 2022, you will submit your end-of-term progress deliverables. There are three primary final deliverables for this class which will be graded. They are the progress report, site plan, and presentation. These are the foundation for the final deliverables you will submit in Senior Design II. You should make progress on each primary deliverable throughout the term. *You are responsible, as a team, for providing updates to the instructor on your progress on your deliverables.* I will provide feedback in as timely a fashion as possible.

Professionalism and appearance are important to deliverables but will only be evaluated as part of the end-of-term submission. When assumptions are required, they must be clearly stated and justified in your final deliverables. As indicated by the ABET description, your design should be based on your knowledge and skills acquired in prior courses. We 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.

*Meetings and Office Hours:* You will be required, as a team, to schedule one meeting with the instructor before the midterm deliverables are due, and one meeting with the instructor prior to submission of the final deliverables. Appointments can also be scheduled during class periods where no lectures are scheduled. Finally, I can work with you to schedule other appointments as needed. I will keep track of these meetings.

*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.

A new resource available this term is the Senior Design Handbook which explains much of the course in more detail. This is the preliminary version of the handbook, and I would appreciate<sup>3</sup> any feedback you may have.

Course Schedule: The **tentative** schedule for this course is in the table below:

<b>Lecture #</b>	<b>Lecture Date</b>	<b>Topic</b>	<b>Deliverable(s) Due</b>
1	08.26.22	Introduction to Senior Design I	None
2	09.02.22	Project Concept Development	Reflection #1;
3	09.09.22	Project Concept Development	Reflection #2; Team Name; Team Agreement;
4	09.16.22	Site Exploration and Geotechnical Considerations	Reflection #3; Project Concept Draft
5	09.23.22	Progress Presentation	Reflection #4; Progress Slides
6	09.30.22	Engineering Decision-making	Reflection #5
7	10.07.22	Construction Management	Reflection #6
8	10.14.22	Construction Drawings	Reflection #7 Midterm Deliverables
9	10.21.22	Panel Discussion with SD Graduates	Reflection #8
10	10.28.22	Progress Presentation	Reflection #9; Progress Slides
11	11.04.22	SDII Practice Presentations	Reflection #10
12	11.11.22	SDI Progress Presentation	Reflection #11;
13	11.18.22	SDII Presentations	Reflection #12; Progress Report; Site Plan; Progress Slides
14	11.25.22	Thanksgiving No Class	None
15	12.02.22	Dead Day No Class	Peer Evaluation;

Course Support: *Teaching Assistant:* Sebastian Lopez will be supporting the course but is not involved in the administration of the course.

Course Objectives: By the end of this two-course sequence 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: Civil Engineering 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>). This statement is consistent with the [UTEP Handbook of Operating Procedures](#). Academic dishonesty includes but is not limited to plagiarism, cheating, and collusion. 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. All suspected violations must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action.

Attendance Policy: I do not take attendance during working sessions for the purposes of a grade.

COVID-19: Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, let us know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, we strongly encourage you to report your results to [covidaction@utep.edu](mailto:covidaction@utep.edu). This will mobilize University resources to both support you and help with communication with your professors as well as initiate contact tracing through Environmental Health Services on campus. This helps to keep everyone safe. Students have access to COVID-19 testing at the Student Health Center.

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.

Accommodations: The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and

activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#).

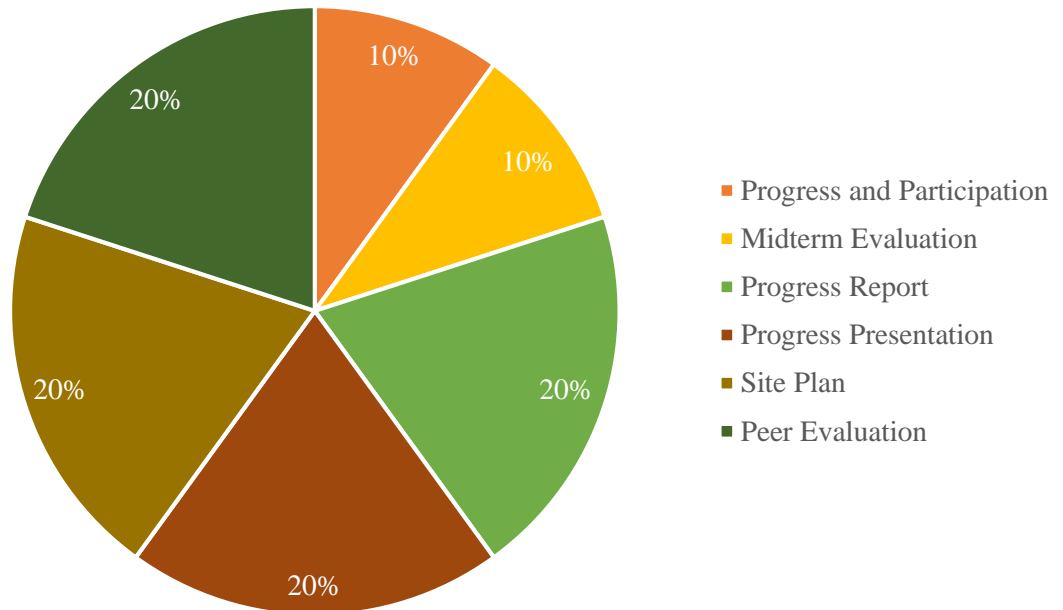
Technology  
Requirements:

The course material (outside of lectures) will be delivered through and stored on Blackboard. Discussions will occur on Blackboard, and assignments will be assigned, submitted, and graded within Blackboard. Announcements will be made through Blackboard. [Microsoft Teams](#) will be used for communication outside of the classroom. This software is provided for free by UTEP. Please download and install Teams. I will invite you to join the course using your UTEP email. Be sure to check that notifications are set up properly in Blackboard and Teams so that you do not miss any important communications. I will not use a personal email address in this course.

You will need access to a computer for this course. To interact virtually, you will need access to video chat capabilities (webcam, microphone). To make use of many UTEP software off campus, you will need [VPN access](#) set up on your computer. The [ETC Helpdesk](#) can support you in terms of technology requirements and [VPN access](#). UTEP can provide support or technology assistance as required. Please see [Technology Services](#) for access to computer, internet connectivity, and other technology-related support issues to facilitate remote learning if required.

## Coursework and Grading Expectations

Grading:      Grade Breakdown:



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

Exams:         There are no exams in this course.

Homework:    There is no homework in this course.