

CENG 4315-31L SPRING 2023  
TRUMAN C. EDMINSTER, P.E.

**Course Logistics and Instructor Contact Information**

Course Title: Senior Design II

Course Number and Section: CENG4315-031L

Scheduled Class Days and Times: Fridays at 12:05pm to 4:50pm

Instructor Name: Truman Edminster, P.E.

Office Location: None

Phone Number: 713-824-7367

Email: [tedminster@uttyler.edu](mailto:tedminster@uttyler.edu) or through course Canvas email

Best way to contact: Course Canvas email

Office Hours: best times are before and after class on Friday

**Course Information**

MEMORANDUM FOR STUDENTS ENROLLED IN CENG 4315-31L

SUBJECT: CENG 4315 - Senior Design II and Administrative Instructions

MEETING TIME: Friday at 12:05pm - 4:50pm

1. Course Overview. This course is essentially two courses in one. Of the 15 meeting times, approximately half will be focused on various topics such as roadway design, drainage design, and site design. The other half of the course is devoted to a comprehensive design problem. You completed a portion of this design problem in CENG 4115. The remainder of the problem will constitute the bulk of CENG 4315 - Senior Design II, this semester.

In this course we will continue the design process as it is performed in engineering practice, and thus the problem that you have been given is intentionally broad in scope, ambiguous in its details, ill-defined and unstructured. The design work will be completed in your groups, with each group member contributing to the overall effort and with primary responsibility for the design within a specific discipline of civil engineering (i.e. structural, geotechnical, drainage, environmental, etc.).

Working in teams, you will complete the design of a residential subdivision and the associated utilities, and the construction of an entry bridge. This design problem will incorporate material from essentially ALL your other civil engineering core courses, including fluid mechanics, soil mechanics, structural analysis, environmental engineering, hydrology, transportation, and construction management. Some of you may have taken geomatics as an elective which you may find helpful as well.

In your Civil Engineering course curriculum, you have received abundant amounts of information. You have studied engineering principles, learned mathematical equations, and solved countless homework problems. But each course has had a particular focus. Each course has been a key building block of Civil Engineering. This course will transcend the individual course focus and will teach you how to assemble these building blocks.

This course is about how to “think like an engineer”. It is about how to state a problem to be solved, then how to logically reason what pieces of previous courses are applicable to solve the problem. It is about remembering the exposure you had to certain engineering concepts and how they may apply to

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the problem at hand. And when you cannot remember (or do not know the necessary information), it is about how to logically find the information you need to possibly solve the problem. It is about testing a possible solution. And, if your solution does not work, how to find another possible solution.

2. Course Prerequisites: CENG 4115.

It is helpful, but not mandatory, for you to have completed as many of the following core courses as possible:

- CENG 3325 – Structural Analysis
- CENG 3336 – Soil Mechanics
- CENG 3351 – Transportation Engineering
- CENG 3361 – Engineering Hydrology
- CENG 3371 – Introduction to Environmental Engineering
- CENG 4339 – Civil Engineering Construction Management

CENG 2336 – Geomatics is provided in the Civil Engineering curriculum as an elective. Many of you may find this course helpful.

Note about AutoCAD. You will find that AutoCAD skills are very advantageous. Though many of you may have taken an AutoCAD course at another institution, you probably learned only certain basic skills.

Hopefully you spent some time in the Fall to learn Civil-3D from Autodesk. It could make as much as a full letter grade difference in your final grade this Spring. This is independent learning outside of the coursework for the class. I do not teach Civil-3D, so I am not a resource for this material.

However, here are some links which are online resources (provided by a former student) that you may find helpful.

- <https://www.linkedin.com/learning/civil-3d-basic-roadway-design>
- <https://www.udemy.com/topic/autocad-civil-3d/>
- Autodesk Knowledge: <https://knowledge.autodesk.com/support/civil-3d/learn?sort=score>
- Linked-in Learning: (Jeff Bartels class was recommended.) <https://www.linkedin.com/learning/civil-3d-2016-essential-training/defining-view-frame-groups>

3. Course Impacts due to COVID-19. The Spring semester will begin on January 9, and the class will first meet on Friday January 13 from 12:05 pm until 4:50 pm. This course will be taught face-to-face.

It is important to take the necessary precautions to ensure a healthy and successful year. UT Tyler continues to urge you to protect yourselves against the flu, COVID and any new threats that may be developing. Be diligent about preventive measures such as washing hands, covering sneezes/coughs, social distancing and vaccinations, which have proven to be successful in slowing the spread of viruses. Encourage those who don't feel well to stay home, and if they show symptoms, ask them to get tested for the flu or COVID. Self-isolation is important to reduce exposure ([CDC quarantine/isolation guidelines](#)). Please work with your faculty members to maintain coursework and please consult [existing campus resources](#) for support.

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4. Student Outcomes. This course has seven (7) Student Outcomes (see Enclosure) that can generally be organized into two groups:

- learning to internalize the engineering thought process by developing the ability to solve ill-defined, real world problems in a rational, systematic, and creative manner and presenting your solution in a clear and concise way; and
- developing a working knowledge of design principles in other advanced topics to examine problems with realistic constraints.

5. Professional Background. I am practicing, licensed civil engineer with over 40 years of experience engaged as a part time adjunct with UT Tyler. I own a local consulting engineering firm and work full-time, Monday thru Thursday and to noon on Fridays. This is the only class I am teaching this semester.

My professional background is in general Civil Engineering with a focus in Land Development. I am a former member of the Houston Planning Commission, a current member of the Houston Historic Preservation Appeals Board, and past president of ACEC-Houston, the local chapter of the Association of Consulting Engineering Companies (also known locally as “the Engineers”). I have also served on numerous committees and task forces assisting in the formation of public policy.

I hold a BS in Civil Engineering from the University of Oklahoma and an MBA from the University of Texas at Austin. It is my sincere hope that I can convey, not only my engineering knowledge, but also my real-world experience.

6. Contact Information and Course Assistance. Email me at [tedminster@uttyler.edu](mailto:tedminster@uttyler.edu) with any questions, comments, or concerns regarding this class. Include proper identification of this class in all emails for a timely response (the subject should always start with the class number). I prefer you use the course Canvas email.

My goal is to be reasonably available to you for assistance, so feel free to meet with me. I have not been assigned an office, so you will need to arrange a mutually agreeable time to meet with me. My preference is prior to or after class on Fridays.

My cell phone number is 713-824-7367. Feel free to call my cell phone and leave a message OR text me. If you email me, my email address is [tedminster@uttyler.edu](mailto:tedminster@uttyler.edu) I will get back to you as soon as I can.

Additionally, you are encouraged to seek additional instruction (AI). Take advantage of AI - it's FREE and will really help!

7. Classroom Procedures. The format of the class is three (3) 75-minute sessions separated by a by two 10-minute breaks. Instruction will be given in a blended lecture and question/answer format. You are encouraged to ask questions during class, particularly about information you do not understand. Class participation is required for this course and is a component of your final grade. Also, I may have announced and unannounced quizzes which are also a component of your grade.

Class participation is more than just asking questions of me. I may call on some of you to answer or comment on an issue that we are discussing. This is an opportunity for you to practice and use what you

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have learned in other courses. It is not so important that you know the correct answer. But it is important that you try to logically reason to an answer, whether it be right or wrong. Remember, this

course is about how to “think like an engineer”. Class participation will give you opportunities to strengthen your thinking abilities in a safe environment.

Please be forewarned during any online classes, if I ask you a question and you do not respond, I will assume you are not “present” even if you are logged in. Consequently, you will receive a zero for class participation that day even though you participate at a different time in the same class. Also, I may give a pop quiz at any time on material that we have just covered in the class. Therefore, I urge you to stay attentive and focused .

It is important that you be alert. Thus, for online classes it is recommended that you be in a place where you can be attentive and will not be distracted. Additionally, it is strongly suggested (but not required) that you have your camera turned on during an online class. Facial contact is most helpful during online classes.

Make sure that your laptop is charged (or connected) and that you have it available at every class. You will need to look up resources and other information during class. You also may want to bookmark this information as we find it.

Bring study notes, note-taking materials, a calculator, an engineer’s scale, straight edge and a felt tip pen to every class. You are not required to use colored pencils or a straight edge, but colors and straight lines can help with emphasis and clarity in your notes. You may need these items for a class exercise, however. I am not responsible for providing these items.

You may not borrow or exchange calculators during graded events. If your calculator fails during a graded exercise, I am not responsible to furnish a substitute. Class preparation is your individual responsibility.

This semester I will collect weekly time data (i.e. time sheets). More to follow in this item in your Assignments.

8. Recording of Class Sessions. Online class sessions are recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

9. Textbooks and Manuals. There are no required textbooks for this class. However, certain manuals that you may have used in other courses may be helpful.

- AISC Manual of Steel Construction, 15th Edition, 2017
- ASCE Minimum Design Loads for Buildings and Other Structures, 7-05
- ACI 318-08 (American Concrete Institute) Building Code Requirements for Structural Concrete and Commentary
- FHWA Flexibility in Highway Design (Federal Highway Administration)

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10. Apportionment of Grades.

- Graded Assignments (5%)
- Weekly Work Plans (5%)
- Weekly Time Sheets (5%)
- Engineering Design Problem (EDP) (70% as follows):
  - 30% Oral Presentation (10%)
  - 60% Design Review (15%)
  - 100% Oral Presentation (15%)
  - 100% Design Submittal (30%)
- Peer Evaluation (10%)
- Class Participation (5%)

As you can see, the Engineering Design Problem constitutes a large portion of your grade for this course and thus stands in for the traditional midterm and final exams.

11. Grading Scale.

A+ 100 % to 96.67%

A < 96.67 % to 93.33%

A- < 93.33 % to 90.0%

B+ < 90.0 % to 86.67%

B < 86.67 % to 83.33%

B- < 83.33 % to 80.0%

C+ < 80.0 % to 76.67%

C < 76.67 % to 73.33%

C- < 73.33 % to 70.0%

D < 70.0 % to 65.0%

F < 65.0 % to 0%

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Of course, final grades are only A, B, C, D, F. Therefore, a C- is a C for a final grade. This distribution is to graphically remind you of how well you are doing. I reserve the right to adjust grades for individual members of design teams who are not pulling their weight.

12. Announced and Unannounced (Pop) Quizzes. I may from time to time have an announced quiz to evaluate your understanding of the course material. I also may give a pop quiz at any time during a class on material that we have covered. Therefore, your attendance and your attention are strongly urged.

13. Exams. There will be no midterm exam and no final exam in this course. This is subject to change.

14. Research Assignments. Periodically, I may request you/your team to research additional information to complement the design project. I will ask you/your team to find the requested information prior to the next class. I will expect that a summary or other presentation of the information be submitted in that class. I may give bonuses to you/your team that finds the useful information first, and reports this to me by submitting the requested summary by email. If I receive information early, I will share the information with the others/other teams who are still responsible for providing me with their write-up of the pertinent information.

15. Embedded indicators of accomplishment of program outcomes. At times throughout the semester, portions of student work will be analyzed to determine if our program is accomplishing stated program outcomes based on established metrics. If your work is below the minimum established metric, you will be required to repeat the assignment or that portion of the assignment until you achieve the minimum acceptable standard based on the metric.

16. Homework. As an engineer your goal is to make a clear, logical, and professional presentation of your work, which is both accurate and correct. As such both your presentation and the accuracy of your work is important, and both will be graded.

All homework in this course must be properly documented. As you will be having your work reviewed it is likely that you might receive help from your classmates. Just simply document it.

Information from course textbooks (equations and outlines of procedures), class notes, or me is considered immediately available to all students and need not be acknowledged or documented with one exception. If an equation from your AISC Manual is used, please provide the equation number and page number in brackets [ ] beside its first use. This will help you as you study from your homework at a later date.

**YOU ARE REQUIRED TO ACKNOWLEDGE AND DOCUMENT ALL OTHER ASSISTANCE AND REFERENCES USED.** Documentation will be accomplished in accordance with any manual for writing footnotes or endnotes for papers, but for written homework, just place the documentation right at the point you received help using “Who and what” assistance.

In order to ensure correctness and to model professional CE practice, this semester we may require you to submit your work to your classmates for “Design Review”. It is critical that you show all your work and leave “footprints” so that it can be easily followed. No guess work should be required to see what you did. All submissions are typically due at 6 pm on the due date.

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If your work constitutes more than 2 pages, include a title sheet. Use Engineer paper or full-page printouts from Mathcad, Excel, Visual Analysis, etc. You may neatly tape or glue short computer printouts onto Engineer paper at the appropriate place in the logical flow of the problem. Only use one side of a page.

Clearly present a brief problem statement and a sketch with your solution. Clearly and concisely explain each step. For narratives of more than a line or two, use your word processor or the text capability if you are using Mathcad or Excel. If you are writing out a paragraph or more, you must type it.

All homework is mandatory and becomes part of your grade. Late assignments will be graded in accordance with the "Late Submission Policy" below.

17. Late Submissions Policy. It is a basic principle of professionalism that "Professionals are not Late." LATE submittals will receive the following point cuts:

- 0-24 hours late - a deduction of 25% of the earned grade
- 24-48 hours late - a deduction of 50% of the earned grade
- More than 48 hours late – a grade of "50". However, assignments must still be submitted.

Failure to submit a late homework assignment by April 15th will result in a grade of zero ('0') for that assignment.

Obviously, there are circumstances that will occur and make a timely submission impossible, and I will work with you when and if they occur. A "COORDINATED LATE" submission occurs when you will miss the due date for a graded homework assignment, AND you contact me in advance. Notification immediately before the submission will not suffice. Be advised that point cuts up to the amounts above may be assessed even for a "COORDINATED LATE" submission.

18. Engineering Design Problem. This course includes a year-long design problem with periodic written submissions. You will be asked to make a 60% submittal and a 100% submittal. These written submissions stand in for the traditional midterm and final exams. These submissions will document critical stages of the design process.

The 30% and 100% submissions will involve a mandatory presentation of your work to a panel of licensed engineers at the beginning of the Spring semester and at the end of the semester, respectively. More information to follow under separate cover.

19. Assigned Readings. Doing the assigned reading prior to class will help you to understand the material presented during the instruction and will fill in gaps for things we do not cover. (I will not cover everything.) It will also make you more familiar with terms and concepts to be covered. To help motivate you to do the reading, there may be quizzes that you are required to complete prior to class on the readings, or there may be announced and unannounced quizzes during class.

20. Bonus Points. There may be opportunities to earn bonus points for outstanding work on problem sets and for completion of other optional assignments. Opportunities for bonus points will be clearly identified by me and announced in class. Make use of these opportunities to extend your learning!

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21. Students Rights and Responsibilities. To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:  
<http://www.uttyler.edu/wellness/StudentRightsandResponsibilities.html>
22. Grade Replacement/Forgiveness. If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats - graduates, for two course repeats - during his/her career at UT Tyler.
23. State-Mandated Course Drop Policy. Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the 12th day of class. For Spring 2023 the deadline is Friday January 20, 2023. Exceptions to the 6-drop rule include, but are not limited to, the following: totally withdrawing from the university; being administratively dropped from a course; dropping a course for a personal emergency; dropping a course for documented change of work schedule; or dropping a course for active duty service with the U.S. Armed Forces or Texas National Guard.
24. Exemptions. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.
25. Disability Services. In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. If you have a disability, including a learning disability, for which you request an accommodation, please contact Ida MacDonald in the Disability Support Services office in UC 282, or call (903) 566-7079.
26. Absences. Life happens. You may become ill or have some other unforeseen mishap. If you are ill, DO NOT COME TO CLASS. However, during an online portion of the course you are expected to be present unless bedridden, hospitalized, etc. Please email or text me of an impending absence. If you will miss a scheduled class, you are still responsible for the material. Also, absences may impact your class participation grade.
27. Student Absence due to Religious Observance. Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the third class meeting of the semester.
28. Student Absence for University-Sponsored Events and Activities. If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.
29. Social Security and FERPA Statement. It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer

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programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

30. Emergency Exits and Evacuation. Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do Not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

Best regards and Welcome!

Truman C. Edminster, P.E.

[STUDENT OUTCOMES.pdf](#)

[Student Resources](#)

[University Policies and Information](#)