

The University of Texas at Tyler
Department of Civil and Construction Engineering and
Management

CENG 4395 – Undergraduate Research
Course Syllabus (Spring 2026)

Course: CENG 4395 – Undergraduate Research

Semester: Spring 2026

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Office Hours: By appointment (please schedule via email)

Meetings: Bi-weekly progress meetings, scheduled individually (no formal class meeting time)

Course Overview

Course Description: *Undergraduate Research in a specific area of civil engineering not covered by organized undergraduate courses.* This course provides a one-on-one, faculty-supervised research experience. The student will propose multiple research topics and, with instructor guidance, select one topic for in-depth study. Research may be experimental or modeling-based, and the student will conduct a comprehensive literature review, develop a methodology, and carry out the research project independently. Bi-weekly meetings (approximately once every two weeks) are held for progress updates, during which the student gives presentations on their work and receives feedback. Strict academic writing guidelines must be followed throughout the course to ensure the final report meets scholarly publication standards.

By the end of the semester, the student is expected to produce a **complete research paper manuscript** ready for submission to a peer-reviewed conference or journal. The student must actually submit this paper for external review as part of the course requirements (*Note: Actual acceptance for publication is not required for course credit, but the paper must be of submit-worthy quality and sent for review*). The course culminates in a **final oral presentation** of the research findings and an **oral examination (defense)** on the chosen topic. This Undergraduate Research is graded on a Pass/Fail basis, emphasizing the satisfactory completion of all milestones over numeric scores.

Student Learning Outcomes

Upon successful completion of CENG 4399, the student will be able to:

- **Identify and formulate research problems** in a civil engineering context, and articulate clear research questions or hypotheses.

- **Conduct a thorough literature review** to survey existing knowledge, identify gaps, and justify the selected research topic.
- **Design and execute an independent research plan**, whether experimental, computational, or analytical, using appropriate engineering methods and tools.
- **Analyze and interpret data or modeling results** to draw evidence-based conclusions about the research question.
- **Apply critical thinking and problem-solving skills** to overcome challenges during the research process, adapting methods as necessary.
- **Communicate research progress and findings effectively** through regular presentations and technical writing, demonstrating professional oral and written communication skills.
- **Produce a publication-quality research paper**, adhering to rigorous writing standards, proper formatting, and citation of sources, suitable for submission to a peer-reviewed venue.
- **Defend the research work orally**, demonstrating depth of understanding of the project and related engineering principles in an oral exam setting.

Prerequisite

Prerequisite: undergraduate standing and Department Chair approval (required for enrollment in CENG 4395). *It is also expected that a faculty member has agreed to supervise the Undergraduate Research prior to registration.*

Required Textbooks and Readings

Textbook: *None required.* There is no official textbook for this Undergraduate Research course. The student is responsible for performing a self-directed literature review on the chosen research topic, including reading journal articles, conference papers, and other relevant publications. The instructor may recommend key references or provide reading materials as needed, but the initiative lies with the student to gather and study pertinent literature.

Other Resources: The student should utilize the university's library databases and online resources to find high-quality sources. Documentation and style guidelines (such as a journal or conference paper template, or the ASCE/IEEE publication style, as applicable) will be provided by the instructor. All writing must conform to the provided guidelines for format, style, and citation.

Milestones and Deliverables (Tentative – Subject to Change)

To earn credit for this course, the student must **satisfactorily complete all the following milestones and deliverables**. Deadlines are tentative and may be adjusted with instructor approval, but any changes must be coordinated in advance:

1. **Research Topic Proposals:** Identify five (5) potential research topics and prepare a brief presentation for each, outlining the problem statement and why it is significant. *Due by*

approximately Week 3. (Initial meeting and presentations scheduled early in the semester.)

2. **Topic Selection:** In consultation with the instructor, select one of the proposed topics as the focus of the independent study. This decision will be made after the proposal presentations (no later than Week 4). The student will then finalize the research scope and objectives for the chosen topic.
3. **Literature Review & Research Plan:** Conduct a comprehensive literature review on the chosen topic and develop a detailed research plan (experiment design or modeling approach, data needed, etc.). *Weeks 4–6:* The student should document key findings from literature and a methodology outline. A progress presentation covering the literature review and proposed methodology will be given in the Week 5 meeting.
4. **Bi-Weekly Progress Presentations:** Participate in scheduled bi-weekly meetings with the instructor to report progress. **Presentations** are required at each meeting (approx. Weeks 5, 7, 9, 11, 13) to demonstrate results, discuss any challenges, and outline next steps. The student should come prepared with slides or other materials as appropriate. (These recurring updates ensure steady progress and allow for feedback.)
5. **Draft Paper Preparation:** Begin writing the research paper in parallel with conducting the research. By **Week 13**, the student must submit a complete **draft manuscript** to the instructor for review. The draft should include an abstract, introduction, literature review, methodology, results, discussion, conclusion, and references, following the prescribed format and writing guidelines.
6. **Manuscript Revision:** Incorporate feedback from the instructor to refine the paper. The **final revised manuscript** must be finished by **Week 14**, representing a publication-quality paper that is 100% ready for submission to a peer-reviewed conference or journal. High standards of technical writing, grammar, and formatting are expected.
7. **Paper Submission:** The student is **required to submit the finalized paper to a peer-reviewed venue** (conference or journal) before the end of the semester. Proof of submission (such as confirmation email) must be provided to the instructor by **Week 15**. *(Note: Actual acceptance for publication is not required for course credit, but the paper must be of submit-worthy quality and sent for review.)*
8. **Final Presentation & Oral Defense:** Deliver a **formal presentation of the research findings** and complete an **oral examination** conducted by the instructor (and possibly other faculty) at the end of the semester. This final presentation/defense is scheduled for **Final Exam Week** and serves as the culminating assessment of the independent study. The student should be prepared to answer in-depth questions about the research methodology, results, and relevant theory.

Grading Policy (Pass/Fail)

Grade Mode: This course is graded on a **Pass/Fail basis** (Credit/No Credit). No numeric or letter grade will be assigned. Instead, to earn a “**Pass**” (**Credit**) in CENG 4399, the student must *satisfactorily complete all required milestones and deliverables* listed above. Satisfactory completion means that the work meets the quality expectations set by the instructor and that all deadlines and course requirements are met. Key requirements include producing a final paper of publishable quality, delivering a successful final presentation, and demonstrating adequate understanding in the oral exam.

Failure to fulfill any of the major course requirements or to show acceptable performance and progress will result in a “**Fail**” (**No Credit**) for the course. In other words, every listed component (proposal, meetings, paper, presentation, and defense) must be completed at a passing level for the student to receive credit. There are no weighted percentages or points—all requirements are mandatory and assessed holistically. A student who meets all expectations will receive a grade of **CR (Credit)** on their transcript, while a student who does not will receive **NC (No Credit)**.

Please note: Because this is an independent study, **incompletes** are generally not given except under extreme circumstances. Missing the final paper submission or presentation will ordinarily result in a failing mark. If you have any concerns about meeting a requirement, communicate with the instructor as early as possible.

Late Work / Assignment Policy

All deadlines and meeting dates in this course are agreed upon as part of the Undergraduate Research plan, and it is a basic principle of professionalism that these commitments are honored. **“Professionals are not late.”** In an independent research setting, falling behind schedule can significantly impact the success of the project.

- If you anticipate that you will be unable to meet a deadline (for example, delivering a draft or presentation on time), **you must notify the instructor as far in advance as possible** to request an extension or make alternate arrangements. Simply notifying the instructor at the last minute (or after a deadline has passed) is not considered acceptable.
- A “*coordinated late*” submission may be arranged **only** in rare circumstances and with prior approval. The instructor will determine how and when a delayed deliverable should be submitted. Unapproved late work or failure to meet a milestone without prior coordination may result in course failure (No Credit).
- Regular communication is crucial. The student is expected to respond to emails and attend all scheduled meetings. **Absences** from scheduled meetings or lack of communication will be treated seriously. If an emergency or unavoidable conflict arises that causes you to miss a meeting, inform the instructor as soon as possible to reschedule. Repeated unexcused absences or extensive lack of progress may be grounds for an unsatisfactory grade.

By adhering to agreed timelines and maintaining open communication, the student will gain the most from this Undergraduate Research and demonstrate the professionalism expected at the undergraduate level.

University Policies and Information

UT Tyler Honor Code: Every member of the UT Tyler community joins together to embrace: *Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.*

Students' Rights and Responsibilities: To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please refer to the [UT Tyler Student Rights and Responsibilities website](#). It is the student's responsibility to be familiar with university policies regarding conduct and academic expectations.

Campus Carry: We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at UT Tyler's [Campus Carry website](#).

UT Tyler: A Tobacco-Free University: All forms of tobacco are not permitted on the UT Tyler main campus, branch campuses, or any property owned by UT Tyler. This policy applies to all members of the University community, including students, faculty, staff, affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes (vapes), smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quit-lines, and group support. For more information on cessation programs, please visit [UT Tyler Tobacco-Free Campus](#).

Grade Replacement/Forgiveness and Census Date Policies: Students repeating a course for grade forgiveness (grade replacement) must file a *Grade Replacement Contract* with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or online at the Registrar's website. Each semester's Census Date can be found on the Academic Calendar. **Failure to file a Grade Replacement Contract** will result in both the original and the repeated grade being used to calculate your overall GPA. Undergraduate students are limited to three grade replacements during their career at UT Tyler; graduate students are allowed two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- **Submitting** Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- **Receiving 100% refunds** for partial withdrawals . (There is no refund for these after the Census Date.)
- **Schedule adjustments** (such as section changes, adding a new class, or dropping without a "W" grade).
- **Being reinstated** or re-enrolled in classes after being dropped for non-payment.
- **Completing the process for tuition exemptions or waivers** through Financial Aid.

State-Mandated Course Drop Policy: Texas law prohibits a student who began college for the first time in Fall 2007 or later from dropping more than six courses during their entire undergraduate career. This includes courses dropped at other public institutions of higher

education in Texas. For the purposes of this rule, a dropped course is any course dropped after the Census Date (see Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the university catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions. (*Note: While this policy primarily applies to undergraduate students, it is included here for your information.*)

Disability/Accessibility Services: In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), UT Tyler provides accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, traumatic brain injury (TBI), PTSD, ADHD, or if you have a history of receiving accommodations in a previous educational environment, you are encouraged to contact the Student Accessibility and Resources (SAR) office for assistance. Start by visiting the **SAR portal** at hood.accessiblelearning.com/UTTyler and fill out the “New Student Application.” The SAR office will reach out to you to schedule an appointment with the Assistant Director of Student Services/ADA Coordinator (Cynthia Lowery) once your application is received. For more information, please see the [UT Tyler Disability Services website](#), visit the SAR Office in University Center #3150, or call 903.566.7079.

Student Absence for Religious Observance: Students who anticipate being absent from class due to a religious holy day or observance are required to inform the instructor of such absences by the second class meeting of the semester. For this independent study, please inform the instructor as early as possible of any conflicts with scheduled meetings or deadlines due to religious observances so that accommodations can be made.

Student Absence for University-Sponsored Events: If you will be absent due to an official university-sponsored event or activity (e.g. athletic competition, conference), you or the event sponsor must notify the instructor at least **two weeks in advance** of the absence. The instructor will work with you to schedule make-up work or adjust deadlines as needed, in accordance with university policy.

Social Security and FERPA Statement: It is the policy of UT Tyler to protect the confidential nature of social security numbers. The University assigns each student a unique student ID number for use in lieu of SSN. **FERPA Notice:** The Family Educational Rights and Privacy Act (FERPA) prohibits the public posting of grades or the sharing of student educational records without consent. **Grades or feedback for this course will not be emailed or posted publicly.** Individual grades will be communicated via Canvas or in person to protect your privacy.

Emergency Exits and Evacuation: In the event of an emergency, everyone is required to exit the building when a fire alarm is activated. Follow the instructor’s directions regarding the appropriate exit route. If you require assistance to evacuate, inform the instructor *during the first week of the semester* so that arrangements can be made in advance. Do not re-enter the building until permission is given by official emergency personnel (University Police, Fire Department, or Fire Prevention Services).

Student Standards of Academic Conduct: Students are expected to uphold high standards of academic integrity. **Scholastic dishonesty** of any form will not be tolerated. Academic dishonesty includes, but is not limited to, cheating, plagiarism, and collusion. **Cheating** is defined and exemplified by the following****:

- Copying from another student's test paper or assignment.
- Using unauthorized materials or devices during a test (e.g. notes, books, calculators or electronic devices not permitted by the instructor).
- Failing to comply with instructions given by the person administering a test.
- Possession of any materials during a test that are not authorized by the instructor (such as notes or "crib sheets"; having a textbook open when it's not allowed). The presence of textbooks or notes during an exam is a violation if their use has been expressly prohibited.
- Using, buying, stealing, or soliciting in whole or in part the contents of an unadministered test, test key, or homework solution, or obtaining unauthorized information about an exam.
- Collaborating or seeking aid from another person during an exam or assignment without permission.
- Discussing the contents of an examination with another student who will take the exam (or providing exam questions to students in another section).
- **Plagiarism:** Plagiarism involves the appropriation or imitation of the language, ideas, and thoughts of another author, and representation of them as one's own original work. In practical terms, "**plagiarism**" **includes, but is not limited to**, buying, stealing, or obtaining a paper or assignment and presenting it as your own work, or copying or using someone else's work (including paraphrasing without citation) as if it were your own. This applies to all submitted drafts and reports in this course – all writing must be original or properly cited.
- **Collusion:** Collusion is unauthorized collaboration with another person in preparing any work offered for credit. "**Collusion**" **includes** collaborating with another student on an assignment without the instructor's approval or helping someone else commit an act of academic dishonesty.

(Note: The above examples are not exhaustive. Any attempt to gain an unfair academic advantage may be considered scholastic dishonesty.) All written work submitted in this course **will be subject to review through plagiarism detection software** to ensure originality and proper sourcing. Suspected violations of academic integrity will be referred to the Office of Student Conduct and may result in severe penalties, up to and including a failing grade in the course or dismissal from the university.

UT Tyler Resources for Students: UT Tyler offers a variety of resources to assist students in achieving academic success and personal well-being:

- **UT Tyler Writing Center:** Provides writing tutoring and editing assistance. Located in the CAS Building (CAS 202); phone 903.565.5995, or email writingcenter@uttyler.edu.
- **UT Tyler Tutoring Center:** Offers free tutoring in many subjects. Contact 903.565.5964 or email tutoring@uttyler.edu for more information.

- **The Mathematics Learning Center (RBN 4021):** An open-access computer lab for math students, with tutors on duty to assist students enrolled in mathematics courses.
- **UT Tyler Counseling Center:** Provides confidential counseling services to students. Located in the University Center; phone 903.566.7254. Seeking help when needed is a sign of strength; students are encouraged to use these resources to support their academic and personal development.

Information for Classrooms and Laboratories: Students are strongly encouraged to practice health and safety measures in all in-person settings. For example, *consider wearing a face mask covering your nose and mouth in public indoor settings (including classrooms or labs) to reduce the spread of illnesses.* The UT Tyler community views the adoption of such practices as consistent with our Patriot values, demonstrating good citizenship and respectful care for fellow classmates, faculty, and staff. If you are feeling ill or experiencing symptoms such as coughing, sneezing, fever, or other signs of illness, please **do not attend in-person meetings.** Contact the instructor as soon as possible to make alternate arrangements. Students who need additional health-related accommodations may reach out to the Office of Student Accessibility and Resources (see contact info above).

Recording of Class Sessions: Class sessions in this course (including meetings between the student and instructor) **may be recorded** by the instructor for the benefit of the student. These recordings, if made, are intended only for use by the enrolled student to review material or feedback. Recordings that contain personally identifiable or FERPA-protected information **shall not be shared** with others not enrolled in the course without explicit written consent from all parties involved. All course recordings are for educational use **only** and should not be distributed or posted publicly. Students are also *not allowed to record meetings* without the instructor's permission, as these meetings often involve individualized instruction and feedback.

(End of University Policies section. Students are expected to be familiar with and adhere to all the above policies. Please ask the instructor if you have any questions or need clarification on any policy.)

Tentative Course Schedule and Milestones

INITIAL SCHEDULE: The following schedule outlines the planned meetings and milestones for the semester. *This schedule is subject to change* – adjustments may be made to accommodate the research progress, conference deadlines, or unforeseen circumstances. The instructor will provide advance notice of any changes. All meetings are bi-weekly unless otherwise noted, and independent work weeks indicate time for the student to conduct research and prepare for the next meeting.

- **Week 1: Orientation & Planning – Initial meeting** between instructor and student. Discussion of research interests, review of course expectations, writing guidelines, and milestone timeline. Student begins brainstorming potential research topics.
- **Week 2: Independent Work** – No meeting this week. Student finalizes a list of five potential research topics. Prepare brief outlines for each topic (identify the problem and why it's important, with preliminary background research).
- **Week 3: Meeting 2 – Research Proposal Presentations.** *Deliverable:* Student presents 5 proposed research topics to the instructor (short presentation for each idea). **Milestone:** By end of Week 3, one topic is tentatively selected for further exploration, based on feedback and discussion.
- **Week 4: Topic Finalization & Literature Review Begins** – The instructor and student confirm the **final research topic** for the Undergraduate Research by the beginning of this week. Student conducts an in-depth literature review on the chosen topic. No formal meeting this week, but the student should provide a brief progress update via email.
- **Week 5: Meeting 3 – Literature Review & Plan Presentation.** Student presents a summary of key findings from the literature review and a proposed research methodology/plan. *Deliverables:* Preliminary bibliography of sources, research questions/hypotheses, and an outline of the experimental or modeling approach. Instructor provides feedback to refine the research plan.
- **Week 6: Independent Research Work** – Student implements the research plan: setting up experiments, collecting data, or developing the model as appropriate. Continue literature review as needed. No meeting this week; however, the student should be writing parts of the paper (introduction, literature review sections) concurrently.
- **Week 7: Meeting 4 – Progress Update Presentation.** Student presents **initial research results** or findings obtained so far (this could include preliminary experimental data, intermediate model results, etc.). Challenges encountered and any adjustments to the methodology are discussed. Instructor and student set targets for the next phase of work.
- **Week 8: Independent Research Work** – Student continues with experiments or simulations, and begins analyzing data. Start drafting the methodology and results sections of the paper. No formal meeting this week.
- **Week 9: Meeting 5 – Progress Update Presentation.** Student presents **updated results** and analysis. By this point, a significant portion of data collection or model development should be completed. Discussion focuses on interpretation of results and any additional data needs. Outline of the paper's remaining sections (discussion, conclusions) is reviewed.
- **Week 10: Independent Research & Writing** – Student works on finalizing any remaining experiments/runs and starts consolidating results. Emphasis now shifts toward **writing**

the first full draft of the research paper. No meeting this week, but the student should consult the instructor as needed via email or office hours if any issues arise.

- **Week 11: Meeting 6 – Progress Update/Q&A.** This meeting is somewhat less formal – focused on troubleshooting and ensuring the project is on track for completion. Student provides a brief update on final results and shares the **paper draft progress** (e.g., an outline or select draft sections) for preliminary feedback. Any concerns about data or analysis should be addressed now. Instructor gives guidance on strengthening the study or analysis if needed.
- **Week 12: Independent Work – Complete Drafting – Milestone:** The student completes the research and all analysis this week, dedicating significant time to writing and polishing the **complete draft manuscript**. Aim to have a near-complete draft ready for review by the end of the week. No meeting scheduled, but the draft may be submitted to the instructor in advance for feedback.
- **Week 13: Meeting 7 – Full Draft Review. Deliverable: Full draft of the research paper due** to instructor (if not submitted in Week 12). During the meeting, the student presents a summary of the final results and conclusions (as a practice for the final presentation) and discusses the draft with the instructor. The instructor provides detailed feedback on content, clarity, and format. The student and instructor also plan for the final presentation and oral defense (format, potential questions, etc.).
- **Week 14: Independent Work – Revise & Submit Paper.** Student incorporates the instructor's feedback and works on **revising the manuscript to its final form**. This week, the student should also prepare the slides and narrative for the final presentation. **Milestone:** The **final revised paper** should be completed by the end of Week 14. Additionally, the student should submit the paper to the chosen conference/journal around this time (if not already submitted). *Note:* Nov 27-28 is the Thanksgiving holiday – University offices closed, no meetings. The student is advised to plan around the holiday to ensure deadlines are met.
- **Week 15: Final Preparations:** This week is reserved for final touches. **Deliverables:** Provide proof of paper submission to the instructor. Practice the oral presentation and defense. If needed, a short meeting or check-in can be held to address last-minute questions. **Important:** The student should be fully prepared for the final oral exam by the end of this week.
- **Week 16 – Final Exam Week: Final Presentation & Oral Defense.** The **final oral presentation** (approximately 30-45 minutes, followed by Q&A) will be conducted this week during the University's scheduled final exam period for this course (exact date and time to be determined in coordination with the student). The student will present the research to the instructor (and any invited faculty or students) and then undergo the **oral examination**, responding to questions about the work. This serves as the final evaluation of the independent study. **Final Grades** will be submitted to the Registrar by the end of the week, in accordance with University deadlines.

Note: Throughout the semester, flexibility is built into the schedule to accommodate the iterative nature of research. However, the student is expected to meet all major deadlines for deliverables unless an extension is approved by the instructor. Regular progress and adherence to this timeline are crucial for a successful outcome in CENG 4399. The instructor is committed to

supporting the student's learning and research development—do not hesitate to seek guidance at any stage. Good luck, and have a productive and engaging semester of research!