

The University of Texas at Tyler
Department of Civil and Construction Engineering and Management
CENG 4199 – Independent Study
Course Syllabus (Fall 2026)

Course:	CENG 4199 – Independent Study
Semester:	Fall 2026
Instructor:	Dr. Baishakhi Bose
Office:	Ratliff Building South (RBS) 1036
Email:	bbose@uttyler.edu
Office Hours:	By appointment via email
Meetings:	Bi-weekly progress meetings, scheduled individually; no formal class meeting time

Course Overview

Course Description: Independent study in a specific area of civil engineering not covered in depth by organized undergraduate courses. This course provides a one-on-one, faculty-supervised research experience designed to introduce the student to the research process, including scholarly literature review, critical evaluation of published work, technical synthesis, and professional communication. The student will investigate an approved topic related to civil engineering and develop an understanding of the relevant scientific and engineering concepts through guided independent study.

The student will meet with the instructor approximately every two weeks to discuss progress, questions, and interpretation of the literature. Emphasis will be placed on developing skills in reading technical publications, organizing and comparing research findings, identifying major trends and knowledge gaps, and communicating technical information clearly. By the end of the semester, the student will complete a written technical report. The course culminates in a final oral presentation of the research findings and an oral examination (defense) on the chosen topic. This independent study is graded on a Credit/No Credit basis, emphasizing the satisfactory completion of all milestones over numeric scores.

Prerequisite

Undergraduate standing, Department Chair approval, and agreement of a faculty member to supervise the independent study.

Required Textbooks and Readings

Textbook: None required. The instructor will provide an initial set of approximately eight papers; the student may identify additional sources as needed with instructor approval. Supporting review articles or background resources may be provided when useful. The student is expected to read the assigned papers carefully and maintain accurate citations and notes throughout the semester.

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.

Student Learning Outcomes:

Upon successful completion of CENG 4199, the student will be able to:

- Read and interpret peer-reviewed engineering literature relevant to the selected research topic.
- Extract and organize technical information using a structured and systematic approach.
- Explain key scientific and engineering concepts relevant to the research topic.
- Compare findings across multiple studies and distinguish recurring trends from study-specific observations.
- Identify research gaps and develop evidence-based interpretations from published literature.
- Communicate a focused technical synthesis through a written report and oral presentation.

Independent Study Research Topic

From Agricultural Residue to Supplementary Cementitious Material: How Thermal Processing Controls Ash Reactivity.

Primary Areas of Literature Synthesis

The literature review will focus on relationships among:

- Feedstock type and source characteristics
- Calcination or combustion temperature and duration
- Chemical and mineralogical characteristics of the resulting ash
- Particle characteristics
- Measures of reactivity
- Cement replacement level
- Mortar or concrete performance

Literature Matrix

A literature matrix will be maintained throughout the semester to support comparison across studies. At minimum, the matrix should capture the citation, agricultural residue/feedstock, relevant thermal-processing conditions, key chemical/mineralogical and particle characteristics, reactivity measure(s), cement replacement level, reported performance, and the student's interpretation of the principal finding.

Bi-Weekly Progress Meetings

The student and instructor will meet approximately once every two weeks. These meetings are intended for discussion of progress, questions, difficult concepts, interpretation of papers, and planning of the next steps. Formal presentations are not required at each meeting unless specifically requested. The student should come prepared to briefly summarize what was completed since the previous meeting and identify any questions or areas where guidance is needed.

Workload and Scheduling

The schedule is structured to minimize major project work during heavier examination periods, with most literature review and synthesis completed before the end of the semester. The student may

distribute the work within each month in a way that fits other academic commitments, provided that steady progress is maintained and the monthly deliverables are completed.

Final Technical Report

The final deliverable is a 5-page technical report (excluding reference section) that synthesizes, rather than simply summarizes, the selected literature. The report should use professional engineering writing, cite all sources appropriately, and demonstrate the student's own interpretation of relationships between thermal processing, ash characteristics, reactivity, and cementitious performance.

A suggested organization is:

- Introduction and research question
- Approach to the literature review
- Effects of thermal processing on ash characteristics
- Relationships among ash characteristics, reactivity, and cementitious performance
- Research gaps and conclusions
- References

Final Oral Presentation

The student will deliver a short 10-minute oral presentation at the end of the semester, as required by the Department. The presentation should communicate the project question, key literature-based findings, major trends or gaps, and the students' overall conclusions. The exact date and format will be coordinated near the end of the semester.

Grading Policy

Grade Mode: This course is graded on a Credit/No Credit basis. No numeric or letter grade will be assigned. Instead, to earn a "Pass" (Credit) in CENG 4199, 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 maintaining satisfactory progress throughout the semester, completing the literature matrix, producing a final 5-page technical report, delivering a successful final oral presentation, and demonstrating adequate understanding of the research topic during the oral examination.

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 required component, including progress meetings, literature review activities, monthly milestones, final report, presentation, and oral examination, 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 report submission or final 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 / Communication Policy

Because this is an independent study, regular communication and follow-through on agreed milestones are important. The student is expected to respond to course-related emails, attend all scheduled meetings, and make satisfactory progress toward the required deliverables.

If the student anticipates difficulty meeting a deadline or attending a scheduled meeting, the instructor should be contacted as early as possible so that an appropriate adjustment can be discussed. If an emergency or unavoidable conflict results in a missed meeting, the student should notify the instructor as soon as possible to arrange a new meeting time.

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 No Credit.

Repeated missed meetings, lack of communication, failure to demonstrate satisfactory progress, or failure to complete major course requirements may result in a grade of No Credit.

Academic Writing and Research Integrity

All submitted work must accurately represent the student’s own reading, analysis, and synthesis. Sources must be cited whenever ideas, data, figures, or interpretations are drawn from published work. Fabricated references, uncited copying, or presenting another person’s analysis as one’s own is not acceptable. The purpose of the project is to develop the student’s ability to read and interpret research literature independently, so the student should discuss any questions about acceptable research or writing assistance with the instructor.

Tentative Course Schedule and Milestones

INITIAL SCHEDULE: The following schedule outlines the planned activities, meetings, and milestones for the semester. This schedule is subject to change to accommodate research progress, university holidays, or unforeseen circumstances. The instructor will provide advance notice of any significant changes. Meetings will generally be held bi-weekly, and independent work weeks are intended for the student to complete assigned reading, update the literature matrix, synthesize findings, and work toward the final report.

- Week 1 (Aug 24 – Aug 30): Confirm research topic and scope and establish recurring meeting schedule with instructor.
- Week 2 (Aug. 31 – Sept. 6): Meeting 1 - Orientation & Project Introduction –Review the selected research topic, research question, course expectations, required deliverables, literature matrix, and semester timeline. Instructor provides the initial set of peer-reviewed literature and guidance on how to read and evaluate research articles.
- Week 3 (Sept. 7 – Sept. 13): Independent Work – Background Reading – Student begins background reading and becomes familiar with the major concepts and terminology relevant to the selected research topic. Begin taking structured notes and identifying information to include in the literature matrix.
- Week 4 (Sept. 14 – Sept. 20): Meeting 2 – Initial Literature Review – Student discusses the initial readings with the instructor, including major findings, questions, and areas requiring clarification. Review the structure and content of the literature matrix and discuss expectations for comparing information across studies.
- Week 5 (Sept. 21 – Sept. 27): Independent Work – Literature Review – Continue reviewing assigned peer-reviewed literature and updating the literature matrix. Begin identifying similarities and differences among the studies.
- Week 6 (Sept. 28 – Oct. 4): Meeting 3 – September Progress Review – Review progress on the background reading and literature matrix. Discuss initial observations and recurring themes. September Milestone: Background reading substantially underway and literature matrix established and populated with initial studies.
- Week 7 (Oct. 5 – Oct. 11): Independent Work – Literature Review and Organization – Continue reading assigned literature and systematically extracting relevant technical information. Begin organizing findings around the major themes of the project.
- Week 8 (Oct. 12 – Oct. 18): Meeting 4 – Progress Update – Discuss findings from the literature reviewed to date, questions arising from individual studies, and emerging similarities or differences across the literature. Instructor provides guidance on moving from paper-by-paper summaries toward synthesis.
- Week 9 (Oct. 19 – Oct. 25): Independent Work – Comparative Analysis – Continue the literature review and literature matrix. Begin comparing findings across studies and identifying recurring trends, areas of agreement, and study-specific observations.

- Week 10 (Oct. 26 – Nov. 1): Meeting 5 – October Progress Review – Review the developing literature synthesis and organization of findings. Discuss major themes and areas requiring additional attention. October Milestone: Literature review progressing satisfactorily, with findings organized around the major themes of the selected research topic.
- Week 11 (Nov. 2 – Nov. 8): Independent Work – Literature Synthesis – Complete remaining assigned readings as appropriate and continue developing comparisons across the literature. Begin identifying major trends, limitations, and unanswered questions.
- Week 12 (Nov. 9 – Nov. 15): Meeting 6 – Synthesis and Research Gaps – Discuss the major findings emerging from the literature review and begin identifying research gaps or areas where existing studies provide incomplete or conflicting information. Review progress toward completion of the literature matrix.
- Week 13 (Nov. 16 – Nov. 22): Independent Work – Complete Literature Matrix & Report Outline – Complete the primary literature review and finalize the literature matrix. Organize the major findings into a logical structure and develop an outline for the final technical report. November Milestone: Literature matrix completed, major trends and research gaps identified, and final report outline developed.
- Week 14 (Nov. 23 – Nov. 29): Thanksgiving Week / Independent Work as Needed – No formal meeting is planned. The student may use this week for independent work if desired, but the project schedule is intentionally structured so that substantial work is not required during the Thanksgiving holiday period.
- Week 15 (Nov. 30 – Dec. 6): Meeting 7 – Final Report and Presentation Preparation – Review the report outline and/or draft sections, discuss organization and interpretation of the literature, and address final questions. Instructor provides feedback for revision. Student prepares the final technical report and begins preparing the oral presentation.
- Final Exam Week (Dec. 7 – Dec. 11): Final Report, Presentation & Oral Examination – Final Deliverables: Submit the completed 5-page technical report and deliver a 10-minute oral presentation summarizing the research question, literature-review approach, major findings, research gaps, and conclusions. The presentation will be followed by an oral examination/discussion in which the student should be prepared to answer questions about the selected research topic and the literature reviewed. Completion of these requirements serves as the culminating assessment of the independent study.

Note: Throughout the semester, flexibility is built into the schedule to accommodate the nature of independent research and the student's other academic responsibilities. However, the student is expected to maintain regular progress and satisfactorily complete all major milestones and deliverables unless an adjustment is approved by the instructor in advance. Regular communication and participation in scheduled meetings are important components of successful completion of CENG 4199.

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 campus](#): 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.

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. For more information, please see the [UT Tyler Disability Services website](#), visit the SAR Office in LIB 460, 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 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.)