

CEE 509 NP / ONL – TRANSPORTATION SOILS

Instructor	Dr. Erol Tutumluer, 1205 Newmark CEE Lab., 217-333-8637, tutumlue@illinois.edu
Schedule	Tuesdays and Thursdays 9:30 – 10:50 AM, 1311 Newmark CEE Laboratory
Office Hours	MWF 1:00 – 2:00 pm (Feel free to call, e-mail, or stop by any other time to consult and interact)
Prerequisite	CE 310 – Transportation Engineering and/or CE 483 – Soil Mechanics and Soil Behavior or equivalent
Text	1. Assigned Readings from Technical Literature and Class Notes and Handouts 2. Tindall, J.A., and J.R. Kunkel, “Unsaturated Zone Hydrology for Scientists and Engineers,” Prentice-Hall, 1999 (currently out of print; related book chapters, 4, 7, 8, 9, 11 and 12, will be available in pdf for Blocks 6 & 7 on moisture and temperature).
Course Content	This is a one-unit graduate level course on transportation soils engineering at the University of Illinois. This course covers occurrences and properties of surficial soils, soil classification systems, soil variability; subgrade evaluation procedures, repeated loading behavior of soils; soil compaction and field control; soil trafficability and subgrade stability; soil moisture, soil temperature, and frost action.
Exams	There will be two exams administered during the semester covering materials from Blocks 1 to 5. A take-home final examination will cover only Blocks 6 and 7.
Grading	<ul style="list-style-type: none">• Exam 1 on Blocks 1 and 2 20%• Exam 2 on Blocks 3 to 5 25%• Final Exam on Blocks 6 and 7 20%• Reading Assignments and Homework 20%• Term Project 15%

Course Web Site <https://canvas.illinois.edu/courses/56155>

Reading Assignments/Homework

- GradeScope (<https://www.gradescope.com/login>), Entry Code: **XGZ7YZ**
- Reading assignments will be in the form of one-page logs/critiques of assigned readings from the technical literature provided. Homework will mainly consist of problem assignments. Both will be due the class period assigned due. If not indicated otherwise, each assignment/homework will be worth 100 points. Unexcused late homework will receive a maximum mark of 80 points.
- Be prepared to discuss and share with class your reading assignments. Student participation inside and outside the classroom is required. This is your opportunity to learn and inquire about the current practice of transportation soils engineering. Make this an educational and profitable semester for you.
- You are encouraged to give feedback to the instructor all throughout the semester.

CEE 509 Course Timetable
Spring 2025 – 1311 Newmark CEE Laboratory

Class Notes – Assigned Readings from Technical Literature and Class Notes/Handouts

Text – Tindall, J.A., and J.R. Kunkel, “Unsaturated Zone Hydrology for Scientists and Engineers,”
 Prentice-Hall, 1999 (Chapters, 4, 7, 8, 9, 11 and 12 for Blocks 6 on moisture & 7 on temperature).

Date	Topic	Class Notes / Text
Jan 21	Block 1: Introduction	Reading Assignment 1
Jan 23	Block 1: Introduction: Surficial Soils, Classification	“
Jan 28	Block 1: Surficial Soils – Geology and Pedology	“
Jan 30	Block 1: Surficial Soils – Pedology	“
Feb 4	Block 1: Surficial Soils – Variability	Assignment 2
Feb 6	Block 2: Subgrade Evaluation	Assignment 3
Feb 11	Block 2: Subgrade Evaluation	“
Feb 13	Block 2: Subgrade Evaluation	“
Feb 18	Block 2: Subgrade Evaluation	“
Feb 20	Block 2: Subgrade Evaluation	“
Feb 25	<i>Examination 1 (covers Blocks 1 and 2; exam may be scheduled to a later date)</i>	
Feb 27	Block 3: Compaction and Compaction Control	Assignment 4
Mar 4	Block 3: Compaction and Compaction Control	“
Mar 6	Block 3: Compaction and Compaction Control	“
Mar 11	Block 4: Repeated Load Behavior – Resilient Modulus	Assignment 5
Mar 13	Block 4: Repeated Load Behavior – Resilient Modulus	“
Mar 15-23	<i>Spring Break</i>	
Mar 25	Block 4: Repeated Load Behavior – Permanent Deformation	Assignment 5
Mar 27	Block 4: Repeated Load Behavior – Permanent Deformation	“
April 1	Block 4: Repeated Load Behavior – Advanced Topics	“
April 3	Block 5: Soil Trafficability and Subgrade Stability	References
Apr 8	Block 5: Soil Trafficability and Subgrade Stability	References
Apr 10	<i>Examination 2 (covers Blocks 3-5; exam may be scheduled to a later date)</i>	
		References/Chapters
Apr 15	Block 6: Soil Moisture	“ /4,7,8,9,11,12
Apr 17	Block 6: Soil Moisture	“ /4,7,8,9,11,12
Apr 22	Block 6: Soil Moisture	“ /4,7,8,9,11,12
Apr 24	Block 6: Soil Moisture	“ /4,7,8,9,11,12
Apr 29	Block 7: Soil Temperature and Frost Action	“ /4,7,8,9,11,12
May 1	Block 7: Soil Temperature and Frost Action	“ /4,7,8,9,11,12
May 6	Block 7: Soil Temperature and Frost Action	“ /4,7,8,9,11,12

May 13 ***Final Exam** (Take-home final exams due 7:00 PM through GradeScope submission)*

(7:00-10:00 PM Tuesday, May 13 – **Class Project Presentations** to be made by team members (online students join in a Zoom meeting) – PPT slides & Project Reports through GradeScope submission)

Mediaspace Recorded Course Lectures:

<https://mediaspace.illinois.edu/channel/channelid/367272932>

Classroom Etiquette

To foster and promote integrity among students, the CEE Honor Code was developed with input from several CEE undergraduate organizations, the CEE Graduate Student Advisory Committee, and the CEE Graduate Affairs Committee. You (the student) commit to honor the code each time you sign an exam, and implicitly whenever you sign homework or other class assignments.

The **CEE Honor Code** pledge is the following:

"I pledge to uphold the highest levels of professional and personal integrity in all of my actions, including (1) never assisting or receiving unfair assistance during exams, (2) never assisting or receiving assistance on class assignments beyond that specified by an instructor, and (3) always fully contributing to group activities that are part of a course activity."

For University policies and regulations please refer to the Student Code (<http://studentcode.illinois.edu/>). You are responsible for maintaining compliance with the University policy on academic integrity as defined in Section 1-402 (<http://studentcode.illinois.edu/article1/part4/1-401/>) of the Student Code, and the Department Honor Code as defined above.

Finally, please note that posting any content from this course, including homework assignments, exams, quizzes, etc. to the Web without explicit permission from the course instructors violates copyright law, the Student Code, and the CEE Honor Code and is therefore not permitted.

Other Important Policies

Absence Policy

The absence policy must be included in the syllabus. Students may not always be eligible to obtain an absence letter for missed classes. Sample policy statements can be found at <http://odos.illinois.edu/community-of-care/resources/docs/sample-policies.pdf> for policies on missed classes and <http://odos.illinois.edu/community-of-care/resources/docs/missed-exams.pdf> for policies on missed exams.

Academic Integrity

The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>.

Academic dishonesty will result in a sanction proportionate to the severity of the infraction, with possible sanctions described in 1-404 of the Student Code (<https://studentcode.illinois.edu/article1/part4/1-404/>). Every student is expected to review and abide by the Academic Integrity Policy as defined in the Student Code:

<https://studentcode.illinois.edu/article1/part4/1-401/>. As a student it is your responsibility to refrain from infractions of academic integrity and from conduct that aids others in such infractions. A short guide to academic integrity issues may be found at <https://provost.illinois.edu/policies/policies/academic-integrity/students-quick-reference-guide-to-academic-integrity/>. Ignorance of these policies is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

In this course you are expected to produce your own work in all assignments. Written assignments will be submitted through SafeAssign, a software tool that compares your writing against a large database as well as to the work of your current classmates and previously submitted assignments. Assignments with close matches to other work will be flagged and investigated.

In this course you are expected to produce your own work in all laboratory reports. You may collaborate with your partner, but each report must be written by each individual separately. We will compare all reports each week against current classmates. If your report has a close match with another it will be flagged and investigated.

In this course the use of calculators or electronic devices (cell phones or others) will not be allowed during examinations. If you are found using one, it will be investigated as potential cheating.

Anti-Racism and Inclusivity Statement

The Grainger College of Engineering is committed to the creation of an anti-racist, inclusive community that welcomes diversity along a number of dimensions, including, but not limited to, race, ethnicity and national origins, gender and gender identity, sexuality, disability status, class, age, or religious beliefs. The College recognizes that we are learning together in the midst of the Black Lives Matter movement, that Black, Hispanic, and Indigenous

voices and contributions have largely either been excluded from, or not recognized in, science and engineering, and that both overt racism and micro-aggressions threaten the well-being of our students and our university community. The effectiveness of this course is dependent upon each of us to create a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to the Bias Assessment and Response Team (BART) (<https://bart.illinois.edu>). Based on your report, BART members will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.

Community of Care

As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regard to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (217-333-0050 or <http://odos.illinois.edu/community-of-care/referral/>). Based on your report, the staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe. Further, we understand the impact that struggles with mental health can have on your experience at Illinois. Significant stress, strained relationships, anxiety, excessive worry, alcohol/drug problems, a loss of motivation, or problems with eating and/or sleeping can all interfere with optimal academic performance. We encourage all students to reach out to talk with someone, and we want to make sure you are aware that you can access mental health support at McKinley Health Center (<https://mckinley.illinois.edu>). Or the Counseling Center (<https://counselingcenter.illinois.edu>). For urgent matters during business hours, no appointment is needed to contact the Counseling Center. For mental health emergencies, you can call 911.

Disruptive Behavior

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office for Student Conflict Resolution (<https://conflictresolution.illinois.edu>; conflictresolution@illinois.edu; 333-3680) for disciplinary action.

Emergency Response Recommendations

Emergency response recommendations can be found at the following website: <http://police.illinois.edu/emergency-preparedness/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>.

Family Educational Rights and Privacy Act (FERPA)

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

Mental Health

Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional wellbeing. The University of Illinois offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings which are covered through the Student Health Fee. If you or someone you know experiences any of the above mental health concerns, it is strongly encouraged to contact or visit any of the University's resources provided below. Getting help is a smart and courageous thing to do for yourself and for those who care about you.

Counseling Center (217) 333-3704

McKinley Health Center (217) 333-2700

National Suicide Prevention Lifeline (800) 273-8255

Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)

If you are in immediate danger, call 911

*This statement is approved by the University of Illinois Counseling Center

Religious Observances

Students should complete the Request for Accommodation for Religious Observances form should any instructors require an absence letter in order to manage the absence. In order to best facilitate planning and communication between students and faculty, we request that students make requests for absence letters as early as possible in the semester in which the request applies.

Sexual Misconduct Reporting Obligation

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here:

<https://wecare.illinois.edu/resources/students/#confidential>

Other information about resources and reporting is available here: <https://wecare.illinois.edu>.

Students with Disabilities

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the as soon as possible. To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should contact Disability Resources and Educational Services (DRES) and see the instructor as soon as possible. If you need accommodations for any sort of disability, please speak to me after class, or make an appointment to see me or see me during my office hours. DRES provides students with academic accommodations, access, and support services. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TDD), or e-mail disability@illinois.edu. <http://www.disability.illinois.edu/>.