CEE 3400 Introduction to Geotechnical Engineering

Schedule and Location:

Lecture:	MW 09:30 AM – 10:45 AM	MoSE 1224
Lab:	F 12:30 PM – 04:45 PM	Mason 1132

Instructor:

Jose Maria Ferdinand V. Calaunan
Ph.D. Candidate in Civil and Environmental Engineering (Geosystems Engineering)
Email: jcalaunan3@gatech.edu
Office Hours: M 1:00 – 2:00 PM, Mason 2141

Teaching Assistant:

Navya Ann Eldho
Email: navyanneldho@gatech.edu
Office Hour: W 11:00 – 12:00 PM, Mason 2274

Course Objectives:

This course introduces students to the engineering properties of soils and their use in common geotechnical and geoenvironmental engineering applications. Specific topics include soil formation, characterization, and classification; compaction and soil improvement; stresses in soils; shear strength; fluid flow through porous media; settlement analyses; and earth retaining structures. The course includes 6 laboratory sessions.

Textbook:

Budhu, M (2015). *Soil Mechanics Fundamentals* (Metric Version), Wiley-Blackwell, 368pp.

Grading:

Midterm Exam	June 24, 2026	20%
Final Exam	Between August 3 and 6, 2026 (TBA)	25%
Pop Quizzes*	Due throughout the semester	5%
Lab Reports	Due throughout the semester	25%
Homework	Due throughout the semester	25%

*Note: Missing a pop quiz without earlier approval from the instructor is considered as an unexcused absence and will result in -1% per missing pop quiz toward the final grade.

Final grade scale: 100% ≥ A ≥ 90% > B ≥ 80% > C ≥ 70% > D ≥ 60% > F

Academic Honor Code:

This course will be conducted under the guidelines of the Georgia Tech Academic Honor Code. Please refer to https://osi.gatech.edu for further questions involving the Academic Honor Code. In particular, cheating of any kind is unethical and unacceptable; quote and attribute any words/ideas that are not your own; wireless communication systems of all kinds must be turned off while in the classroom.

Attendance

Attendance at all lectures is **mandatory**. Missing 4/5 pop quizzes will cause a drop in letter grade. In accordance with the Institute's requirement, verification of participation in the class will be reported to the Registrar's Office and the Office of Scholarships and Financial Aid.

Homework

- 5 homework assignments (HW) throughout the semester.
- The due date of each HW will be specified on Canvas. HW turned in after 6:00 PM on the due date will be penalized by 10% per day late, including weekends and holidays.
- HW can only be turned in on Canvas. **Do not submit HW by email.**
- You are allowed (and encouraged) to work in study groups on HW, but each completed assignment should be your own work.
- It is **NEVER** acceptable for different students to turn in copies of the same solution. Please list any people with whom you studied on your assignment.

The following formats are **REQUIRED** for all homework assignments.

1. Turned-in HW must be neat, legible, and organized.
2. Be certain to place your name, the HW number, and the date.
3. All graphs must be computer-generated. Hand-drawn graphs will not be graded.
4. Experimental data should be plotted as discrete points, while theoretical relationships should be shown as continuous lines.
5. Show all units. Be sure to track units throughout calculations and include them in final answers.
6. Clearly state any assumptions (such as an assumed unit weight or density) you have made in solving the problems.

Laboratory Periods

The laboratory schedule is attached at the end of this syllabus. We will have 6 lab meetings. The experimental tests will cover: (1) Grain size analysis (2) Atterberg limits, (3) Hydraulic conductivity, (4) Compaction, (5) Consolidation, and (6) Shear strength test demo. You will need to submit a report for the first 5 of the 6 lab sessions.

Due dates of lab reports can be found in this syllabus. Lab reports turned in after 6:00 PM on the due date will be penalized by 10% per day late, including weekends and holidays.

All lab reports must be submitted electronically through Canvas. While you will conduct the experiments in a group, you need to submit your own copy of the lab report.

Electronics Use Policy

You are strongly encouraged to avoid email, texts, social media, and all other electronic distractions during lectures. Engineering is difficult, and it requires a great deal of concentration and our dedicated focus. The summer semester is a short semester to teach the extensive set of topics that will be introduced in this class, so your full focus and attention will be necessary.

Course Communications

- Information for the class will be posted by the instructors and TAs via the course website, accessed at https://canvas.gatech.edu.
- Course forums moderated by the instructor and TA on Piazza. Piazza is an effective way to get answers to your questions quicker than emails since students, the TA and the instructor can answer your questions. The link to the Piazza page is here: https://piazza.com/gatech/summer2026/cee3400a.
- **Do not send emails/messages through Canvas**, as I will not read/respond to them. Please contact me through my GT email (jcalaunan3@gatech.edu) or stop by my office (Mason 2141) to discuss any aspects of this course (if you want to see me in my office in a time besides office hours, sending an email ahead of time will be the best way to make sure I am in).

Accommodations

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or https://disabilityservices.gatech.edu, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodation letter. Please also email me as soon as possible in order to set up a time to discuss your learning needs.

Class Schedule (subject to change)

Week	Day	Lecture	Date	Topic	Reading	Assigned
1 HW 1†	M	1	18-May	Introduction and soil composition	1.1-1.3.2	
	W	2	20-May	Grain size analysis and characterization	1.4-1.7	
2	M	-	25-May	Memorial Day (no class)	-	
	W	3	27-May	Classification	2.4-2.7	Lab 1
3 HW 2†	M	4	1-Jun	Clay minerals and fabric	1.3.3 -1.3.5	
	W	5	3-Jun	Phase relationships	2.1-2.3	Lab 2
4	M	6	8-Jun	Site and soil investigation	3.1-3.7	
	W	7	10-Jun	Hydraulic conductivity and fluid flow 1D and 2D	4.1-4.12	
5 HW 3†	M	8	15-Jun			
	W	9	17-Jun	Compaction	5.1-5.6	
6	M	10	22-Jun	Compaction	5.7-5.9	
	W	-	24-Jun	Midterm Exam	-	Lab 3
7 HW 4†	M	11	29-Jun	Surface loads	6.1-6.3	
	W	12	1-Jul	Total and effective stresses	6.4	Lab 4
8	M	13	6-Jul	Lateral earth pressure	6.5-6.7	
	W	14	8-Jul	Soil settlement/consolidation (via Zoom*)	7.1-7.10	
9 HW 5†	M	15	13-Jul	Soil settlement/consolidation		
	W	16	15-Jul	Time rate of settlement	7.11-7.14	Lab 5
10	M	17	20-Jul	Shear strength	8.1-8.4	
	W	18	22-Jul	Lab experiments for shear strength	8.7-8.11	Lab 6
11	M	19	27-Jul			
	Between 3-Aug and 6-Aug			**Final Exam (TBA)**		

*Zoom link for remote classes: *TBA in Canvas*

† Homework assigned at the end of corresponding week

Lab Schedule (subject to change)

Week	Date	Lab No.	Topic	Due Date
2	29-May	1	Grain Size Analysis	8-Jun
3	5-Jun	2	Atterberg Limits	15-Jun
6	26-Jun	3	Hydraulic Conductivity	6-Jul
7	3-Jul	4	Compaction	13-Jul
9	17-Jul	5	Consolidation	27-Jul
10	24-Jul	6	Shear Strength Demo	No Report Due