Soil Mechanics
CEG 4011 All Sections
***Class Periods:* M, W, F, 6th period, 12:50 – 1:40 pm**
***Location:* FLG265**
***Academic Term:* Fall 2024**

Instructor:
Dr. Ana Mohseni
amohseni@ufl.edu
352-294-7766
Office Hours (Weil 265 G):
- During lab weeks: Wednesday, 4:00 – 4:50 pm
- Weeks without lab: Wednesday, 2:00 – 2:50 pm

Undergraduate Scholars:
Homework grading (Weil 256):
- Miguel Marban, email: miguelmarban@ufl.edu, Tuesday, 10:40 – 11:30 pm
- Olydia Villa, email: olydiavilla@ufl.edu, Thursday, 10:40 – 11:30 am
- Emily Thompson, email: thompsonemily@ufl.edu, Tuesday, 3:55 - 4:55 pm
- Ethan Geiger, email: geigere@ufl.edu, Wednesday 10:40 - 11:30 pm

Laboratory grading (Weil 256):
- Isabel Johnson, email: isabel.johnson@ufl.edu, Monday, 10:40 - 11:30 am
- Davis Orr, email: davis.orr@ufl.edu, Monday, 1:55 – 2:45 pm
- Spencer Thomas, email: spencer.thomas@ufl.edu, Thursday, 12:50 – 1:40 pm

Course Description
Physical properties of soils, compaction, the flow of water through soil, distribution of stress within the soil, and consolidation. Laboratory required.

Course Pre-Requisites / Co-Requisites
EGM 3520

Course Objectives
This course requires the student to apply basic math, science and engineering principles to solve engineering problems. The weekly laboratory sections require the ability to conduct experiments and analyze and interpret data. Working in groups fosters the ability to function efficiently as a team. The written laboratory reports represent forms of technical communication. Homework and the four exams require the ability to identify, formulate and solve engineering problems.
The student is expected to learn:
- The basics of physical geology – the rock cycle, plate tectonics, origin, transportation and deposition of soils, etc.
- The definitions of Soil Mechanics and the use of phase diagrams
- To classify soils by the USCS and AASHTO systems
- To calculate geostatic stresses
- To estimate stress distribution in soil
- To make calculations on the 1-D and 2-D flow of water through soils
- To calculate the consolidation settlement of structures on clay
- The fundamentals of soil shear strength
- The procedures for performing standard soil laboratory tests

Materials and Supply Fees

N/A

Relation to Program Outcomes (ABET):

The table below is an example. Please consult with your department's ABET coordinator when filling this out.

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	
3. An ability to communicate effectively with a range of audiences	High
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Medium
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	High

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

- There is no required textbook for this course. Handouts for some lectures will be provided in PDF format and posted on Canvas. Be sure to look over these and bring them to class so you can follow along. Lecture notes are the student's responsibility.

Recommended Materials

- Geotechnical Engineering: Principals and Practice by Donald P. Conduto
- Fundamentals of Ground Engineering by John Atkinson
- Principles of Geotechnical Engineering by Braja M. Das, any edition
- Fundamentals of Geotechnical Engineering by Braja M. Das, any edition
- Soil Mechanics in Engineering Practice by Terzaghi, Peck and Mesri
- Soil Mechanics by Lambe & Whitman

These books are a good reference, especially for those students who would like to practice more problems than the ones solved in class and homework. There are also many other soil mechanics and geotechnical engineering books at the library.

Attendance Policy, Class Expectations, and Make-Up Policy

1. **Attendance: Not required**

2. **Laboratory:** Attendance to face to face lab is mandatory. Lab reports are due at the beginning of the next lab meeting, unless otherwise instructed. Pre-labs will be due at the beginning of the lab to be conducted.
   - **Lab reports and pre-labs will be considered late 10 minutes after the start of lab (2:05 PM)**; they will not be accepted after the lab is finished. **ALL lab reports must be submitted to receive credit for the course. Late labs will automatically receive a zero. Students have a week to turn in late labs to receive credit for the course.**
   - **PPE:** Pants and closed-toed shoes are required for lab attendance. If a student does not have proper attire, then the student will receive a 10% deduction on their lab report and will have to leave and make-up the lab during a different section. There are NO exceptions to this policy.
   - **Lab absence:** If a student has a valid excuse for missing a lab then prior notice and approval must be granted.

3. **Assignments:** Homework will be assigned approximately weekly and it is due at the start of the class period on the day specified; no later than 11:59 PM. **All homework submissions will be done online in Canvas. Late homework will be accepted if submitted by 11:59 PM within 24h of the original due date for a 10% penalty. After that, no late HW will be accepted!** These rules apply unless advance written notice has been submitted to the instructor for a valid excuse. All homework must follow the format below. Illegible homework is subject to being rejected by the TAs for grading purposes.

4. **Homework Submission Instructions:**
   - All homework must be submitted on canvas using **engineering computation paper**. **If you are solving directly on the computer or tablet, engineering paper is not necessary.**
   - Work should be organized and neat. Assumptions should be clearly stated, appropriate units should be noted on answers and answers should be boxed, underlined or otherwise appropriately labeled. If your answer is not clear you will not receive credit.
   - Enough space should be provided between problems to clearly identify each one.
   - Numerical answers should be given with an appropriate number of significant digits.
   - Illegible homework is subject to being rejected by the TAs for grading purposes.

5. **Exams:** Each exam will concentrate on the material most **recently covered, and they will be handled during the evening with 100 minutes in a designated classroom**. No open notes during the exams. You will receive a formula sheet during the exam which must be returned at the end of the exam. Please do not write on the formula sheet.
   - **Make-up Exam/Late Assignment Policy:** Do not miss an exam unless you have a valid excuse. Make-up exams will only be rescheduled if prior approval is granted and the student must make a reasonable attempt to take the exam prior to the scheduled exam date. Exams can be reviewed at any time in the T.A.'s office but will not be returned to keep. To receive any points back you must talk with the T.A. within the first week after grades are published.
   - **The instructor and assistants will discuss any exam, homework, or lab report within 1 week (excluding holidays) after the grades are posted. After this, the discussion is closed, and grades are final.**
   - **Calculator Policy for Exams:** The only calculators that are allowed for use during the exams are the ones that are permitted for the Fundamentals of Engineering Exam, which all civil engineering students are required to take prior to graduation. **There are NO exceptions to this policy.**

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (10)	100 each	10%
Lab reports (10)	100 each	20%
Exams (5)	100 each	70%
Total		100%

Grading Policy

Percent	Grade	Grade Points
93.5 - 100	A	4.00
90.0 - 93.49	A-	3.67
87.0 - 89.99	B+	3.33
83.5 - 86.99	B	3.00
80.0 - 83.49	B-	2.67
77.0 - 79.99	C+	2.33
73.5 - 76.99	C	2.00
70.0 - 73.49	C-	1.67
67.0 - 69.99	D+	1.33
63.5 - 66.99	D	1.00
60.0 - 63.49	D-	0.67
0 - 59.99	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

The minimum grade to pass this course is a C!

Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform,

including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://care.dso.ufl.edu.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.

Tentative Course Outline:

Lecture #	Week day	Month	Day	Description	HW	Lab #
-	M	Aug	26	Introduction		1 Specific Gravity
1	W	Aug	28	Geology of Soils, Grain size, Shape, Angularity		
2	F	Aug	30	Phase Diagrams		
-	M	Sep	02	Labor day - no class		No Lab
2	W	Sep	04	Phase Diagrams		
2	F	Sep	06	Phase Diagrams	HW-1	
3	M	Sep	09	Atterberg Limits, Soils Structure		2 Sieve Analysis **Lab 1 due**
4	W	Sep	11	Soil Classification	**HW-1 due** HW-2	
4	F	Sep	13	Soil Classification		
4	M	Sep	16	Soil Classification ***END OF TEST 1 TOPICS***		3 Atterberg limits **Lab 2 due**
-	W	Sep	18	**Review Test #1**	**HW-2 due**	
-	R	Sep	19	**Test #1 IN THE EVENING (Thursday 8:20-10:00 PM)**		
5	F	Sep	20	Compaction	HW-3	
6	M	Sep	23	Geostatic Stresses		4 Relative Density **Lab 3 due**
6	W	Sep	25	Geostatic Stresses	HW-4 **HW-3 due**	
7	F	Sep	27	Stresses Due Surface Loads		
7	M	Sep	30	Stresses Due Surface Loads ***END OF TEST 2 TOPICS***	**HW-4 due**	
-	W	Oct	02	**Review Test #2**		5 Compaction **Lab 4 due**
-	R	Oct	03	**Test #2 IN THE EVENING (Thursday 8:20-10:00 PM)**		
-	F	Oct	04	No Class		
8	M	Oct	07	Permeability	HW-5	6 Permeability **Lab 5 due**
9	W	Oct	09	1D Flow		
9	F	Oct	11	1D Flow	HW-6 **HW-5 due**	

10	M	Oct	14	2D Flow		7 Unconfined Compression **Lab 6 due**
10	W	Oct	16	2D Flow	**HW-6 due**	
-	R	Oct	18	Homecoming – no class		
10	M	Oct	21	2D Flow ***END OF TEST 3 TOPICS***		No Lab
-	W	Oct	23	**Review Test #3**		
-	R	Oct	24	**Test #3 IN THE EVENING (Thursday 8:20-10:00 PM)**		
-	F	Oct	25	No class		
11	M	Oct	28	Mohr Circle	HW-7	8 Direct Shear **Lab 7 due**
11	W	Oct	30	Mohr Circle		
12	F	Nov	01	Shear Strength	HW-8 **HW-7 due**	
12	M	Nov	04	Shear Strength		9-10 Consolidation **Lab 8 due**
13	W	Nov	06	Consolidation Settlement	**HW-8 due**	
14	F	Nov	08	NC Clays		
-	M	Nov	11	Veteran's day – no class		9-10 Consolidation readings all week
-	W	Nov	13	Review test #4	HW-9	
-	R	Nov	07	**Test #4 IN THE EVENING (Thursday 8:20-10:00 PM)**		
15	R	Nov	15	OC Clays		
16	M	Nov	18	Time rate consolidation	**HW-9 due** HW-10	No Lab
16	W	Nov	20	Time Rate Consolidation ***END OF TEST 5 TOPICS***		
-	F	Nov	22	**Review Test #5**	**HW-10 due**	
-	M	Nov	25	Thanksgiving week - no class		No Lab
-	W	Nov	27	Thanksgiving week - no class		
-	F	Dec	39	Thanksgiving week - no class		
-	M	Dec	02	**Test #5 IN THE EVENING (Monday 8:20-10:00 PM)**		No Lab **Lab 9-10 due on Dec 04 from 12:50 – 1:00 (TA's office Weil 256) ALL SECTIONS**
-	W	Dec	04	--No class--		