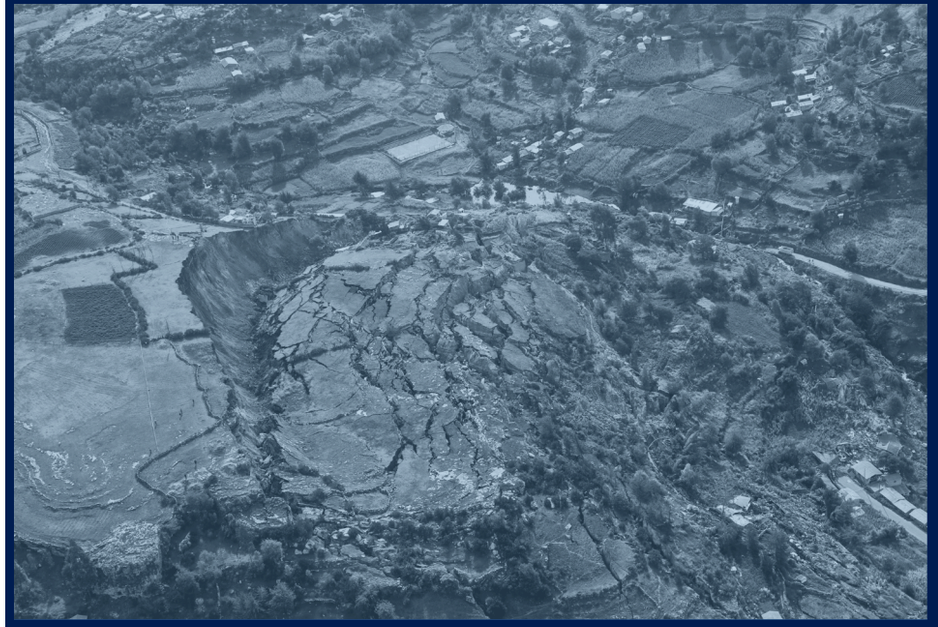
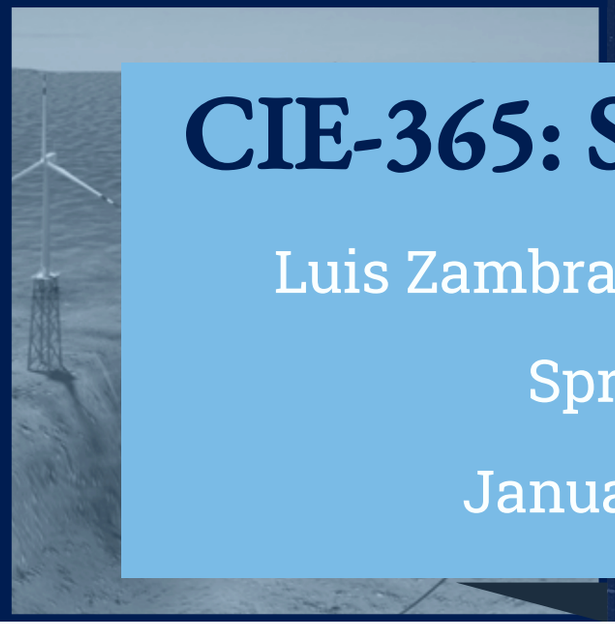




1865 THE UNIVERSITY OF MAINE

CIE-365: Soil Mechanics

Luis Zambrano-Cruzatty, Ph.D.

Spring 2023

January 18, 2022

Create an iClicker Student Account

Add an Instructor's Course in the iClicker Student App

WHICH CAT IS THE CUTEST?

A

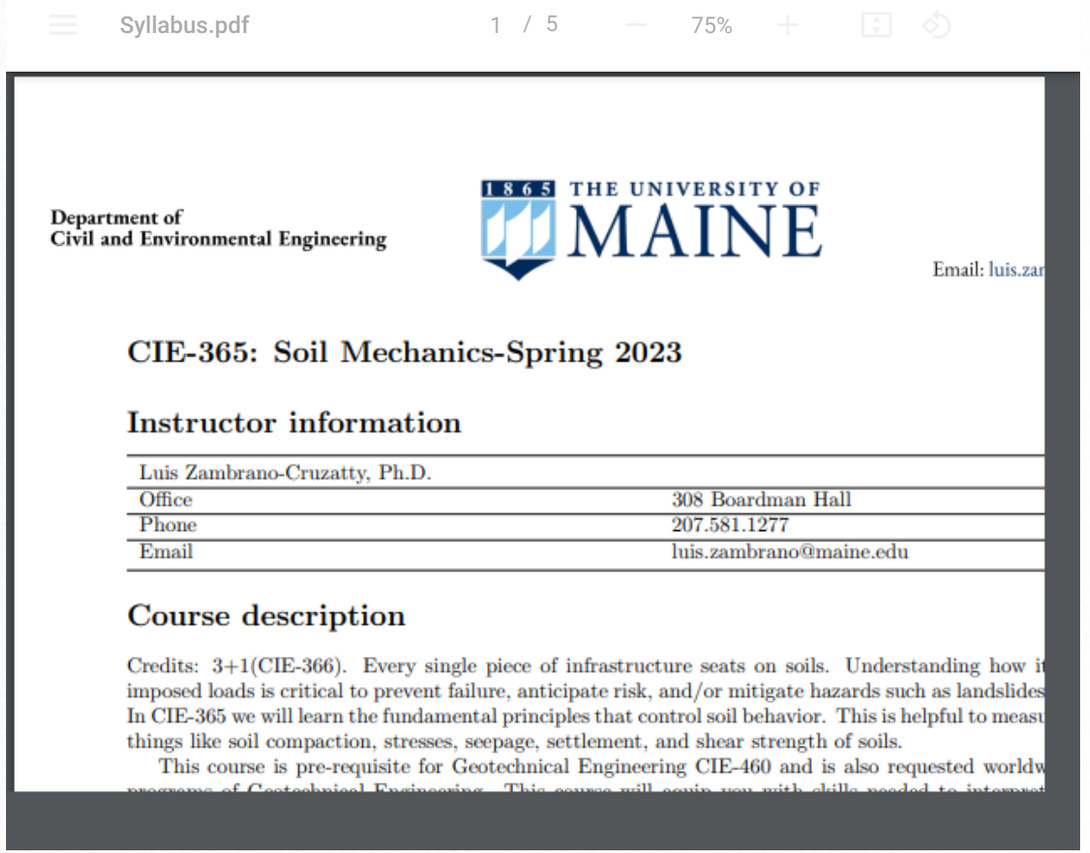
B

C

D

CONTENTS

- Syllabus
  1. Introduction
  2. Computational resources
  3. References
  4. Course objectives
  5. Learning outcomes
  6. Course assessment
  7. Grades
  8. In-Class policies
  9. Tentative schedule



ABOUT THE INSTRUCTOR

Name: Luis Zambrano-Cruzatty, Ph.D.

Office: 308 Boardman Hall

Office hours: Tuesday and Thursdays from 11 AM to 12 PM. Other times by appointment only

Email: luis.zambrano@maine.edu

Phone: 207.581.1277

GRADERS

- Kelsey Weir
- Madison Ala

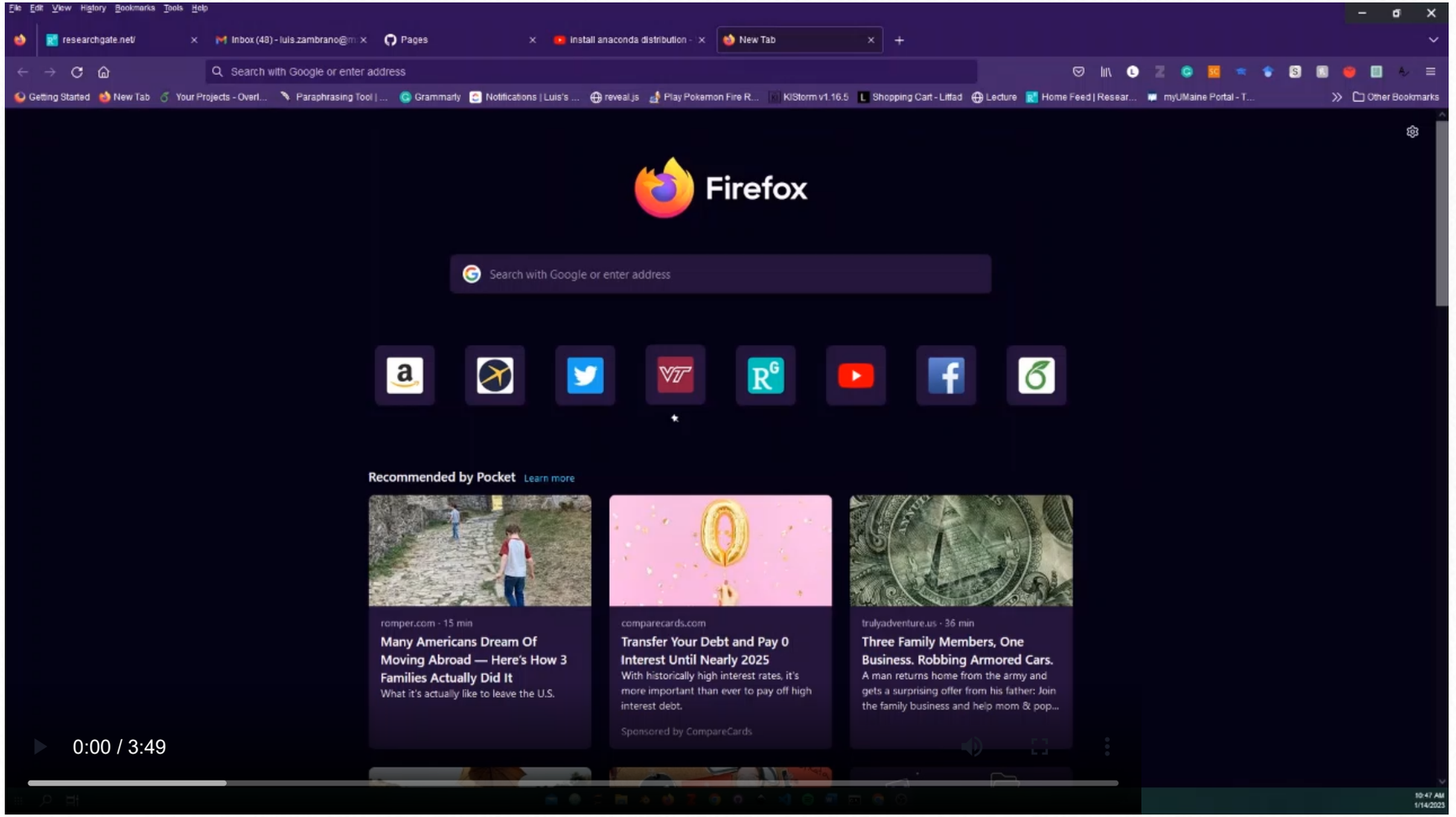
COURSE DESCRIPTION

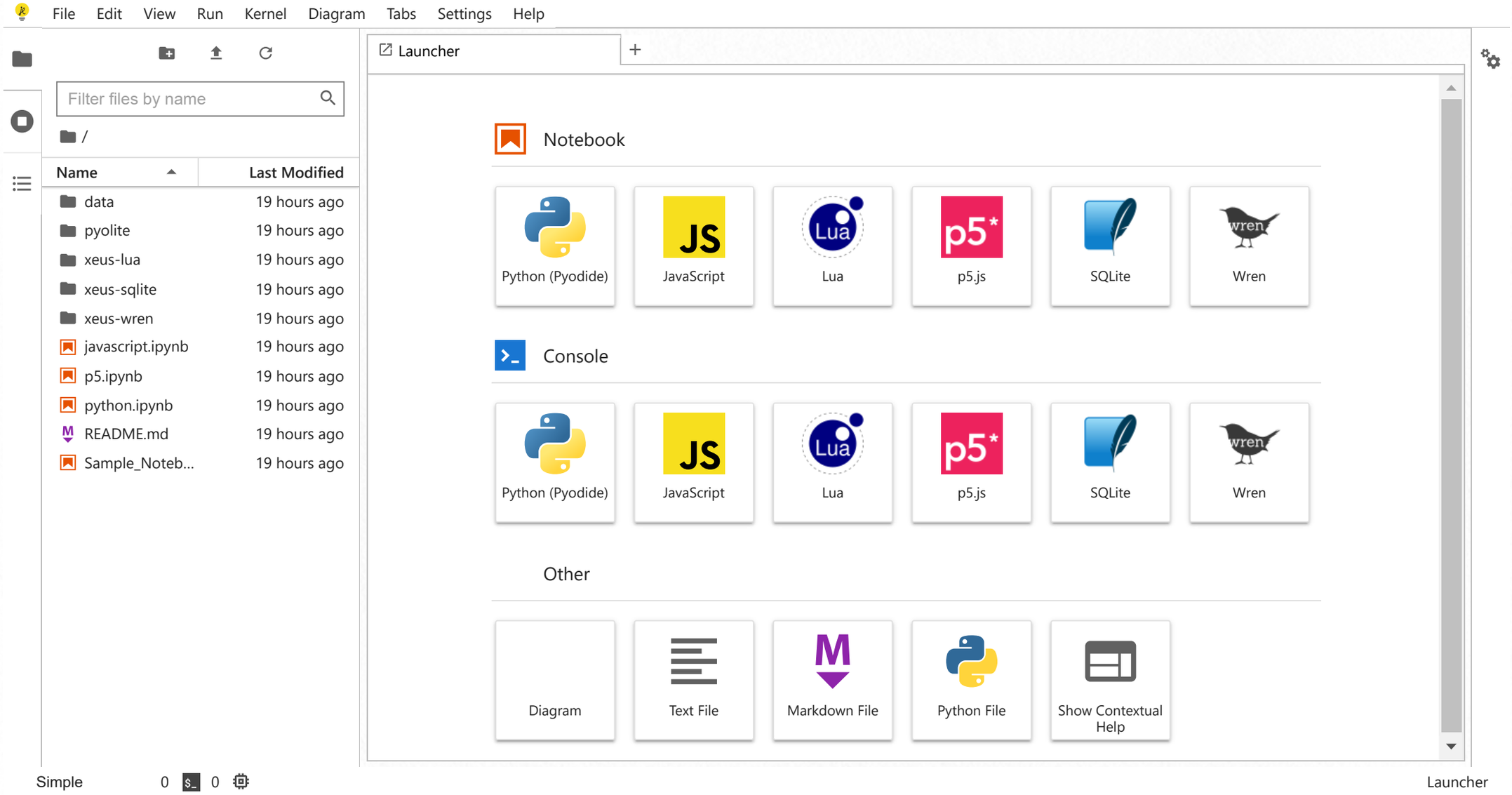
- Practice oriented.
- You will be doing lots of calculations.
- Lecture and laboratory components.

COMPUTATIONAL RESOURCES AND MATERIALS

- Course materials and communications will be shared in Brightspace
- You will need to use spreadsheets or coding to process data (e.g., Python)
- I will use Jupyter Notebooks to solve problems.

HOW TO INSTALL JUPYTER NOTEBOOKS

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Wren
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Diagram
Text File
Markdown File
Python File
Show Contextual Help
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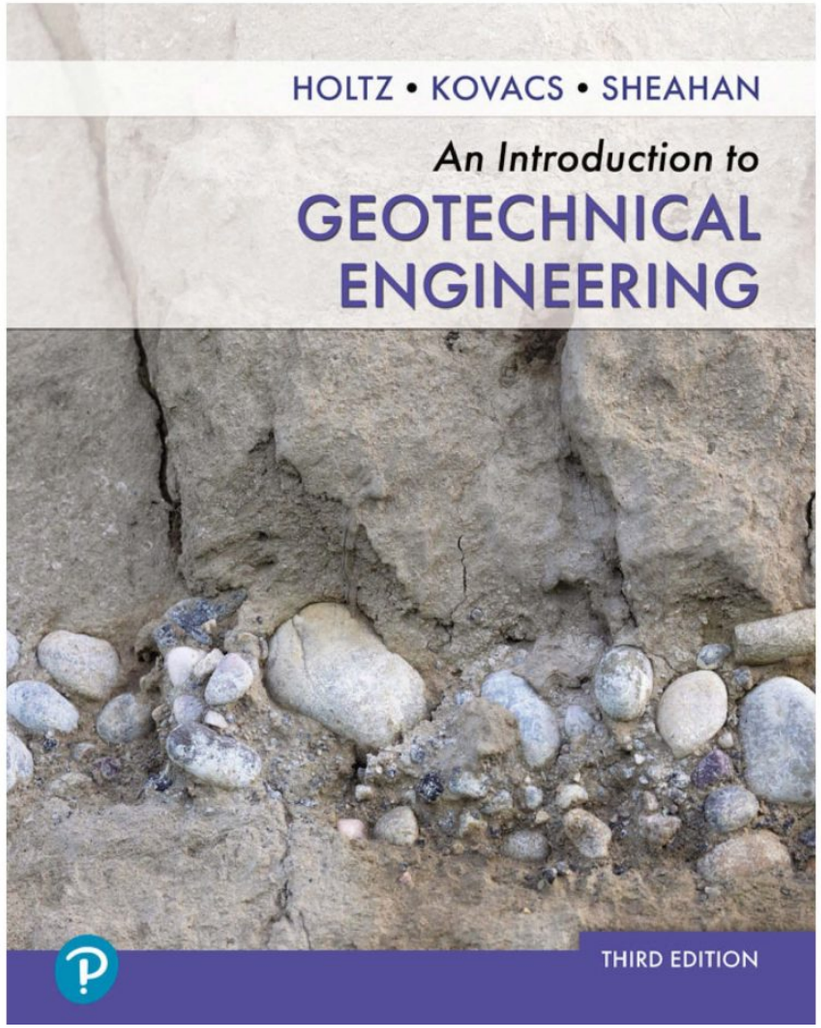
Launcher

REFERENCES

Mandatory book:

- Holtz, R.D., Kovacs, W.D. and Sheahan, T.C., 1981. An introduction to geotechnical engineering Third Edition (Vol. 733).
  Englewood Cliffs: Prentice-Hall.



COURSE OBJECTIVES

1. Develop an understanding of soil phase relations, index properties, and their application to soil classification and compaction.
2. Develop an understanding of the importance of groundwater and seepage and its role in evaluating the effective stress in soils.
3. Develop an understanding of [...] stiffness/compressibility of soils and the role of seepage and permeability on [...]settlement.
4. Develop an understanding of stress state and shear strength of soils and its role in the overall stability of earthen systems.

LEARNING OUTCOMES

1. Use soil phase relationships and understand soil index properties to characterize and classify soils.
2. Calculate total and effective stresses in soils considering water transport effects.
3. Calculate change of stresses due to some imposed loads and the settlement and rate of settlement due to consolidation of fine grained soils.
4. Evaluate stress states and calculate shear strength of soils using triaxial and direct shear tests.

COURSE ASSESSMENT

- About 13 short homeworks: 20% of grade
- In class iClicker quizzes: 20% of grade
- Take-home midterm exam: 30% of grade
- Take-home final exam: 30% of grade

GRADING SCHEME

- A: Equal or above 93
- A-: 90-93
- B+: 87-90
- B: 83-87
- B-: 80-83
- C+: 77-80
- C: 73-77
- C-: 70-73
- D: 60-70
- F: Below 60

HOMEWORK

1. Submit homework using Brightspace. You will need to complete a submission training first.
2. You will input the answer to questions in input text boxes.
3. Upload a picture of your solution in **pdf format only**.
4. **Three opportunities** to submit your solutions.
5. **Immediate feedback** on how well you are doing.
6. Collaboration among classmates is encouraged but **work must be original**.
7. Late assignments are allowed if you check the option on the "quiz".
8. Start thinking with a professional mindset.

QUIZZES

- In-class and frequent using iClicker.
- Prompted during carefully chosen points in the class.
- You can also ask questions for clarity.

QUIZ 0.1

What is the only file format I can submit homework in Brightspace?

- A: *.jpeg format
- B: *.png format
- C: *.pdf format
- D: *.xdoc format
- E: All are possible

QUESTIONS

Do you have any question?

MIDTERM AND FINAL EXAM

- Take home exam.
- Administered by Brightspace.
- Open-notes.
- Based on a case history problem.
- Objective. Very specific set of questions.
- While you solve your exam, you can reach out to me for help.

IN-CLASS POLICIES

- In-person and synchronous course. Assistance is required.
- Do not play games, or navigate Facebook, Twitter, or other social networks in class (focus is monitored by iClicker).
- Switch to silent mode on your phone. Please exit the classroom if you have an urgent call.
- If you are unwell with COVID-like symptoms and are afraid of missing a quiz date. Please send me an email to remove those from your grade.

COURSE SCHEDULE DISCLAIMER

In the event of an extended disruption of normal classroom activities (due to COVID-19 or other long-term disruptions), the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

ACADEMIC HONESTY

Please see the University of Maine System's Academic Integrity Policy listed in the Board Policy Manual as Policy 314: https://www.maine.edu/board-of-trustees/policy-manual/section-314/

ACCESSIBILITY SERVICES

If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581.2319, as early as possible in the term. Students who have already been approved for accommodations by SAS and have a current accommodation letter should meet with me Luis Zambrano-Cruzatty privately as soon as possible.

SEXUAL VIOLENCE POLICY

Your teacher is required to report sexual violence events to Title IX Student Services or the Office of Equal Opportunity. If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources: For confidential resources on campus: Counseling Center. For confidential resources off campus: Rape Response Services or Partners for Peace. Other resources: For support services on campus: Title IX Student Services, Office of Community Standards, University of Maine Police or 911.

COURSE CONTENTS AND SCHEDULE

Schedulle.pdf 2 / 2 100%

W	3/22/2023	Consolidation: Rate of consolidation	Bonus
F	3/24/2023	Consolidation: Calculation of time-dependent consolidation	
M	3/27/2023	No class, video lecture: Consolidation: Applications	
W	3/29/2023	No class, video lecture: Soil strength: 2D State of stress and principal stresses	Consolid.
F	3/31/2023	Soil strength: 2D State of stress and principal stresses	
M	4/3/2023	Soil strength: Stresses at any orientation plane and Mohr's circle	Settlement
W	4/5/2023	Soil strength: Invariant stresses	estimates
F	4/7/2023	Soil strength: Solved samples of Mohr-circle problems using graphical solutions	
M	4/10/2023	Soil strength: Dilation of soils	Unconf.
W	4/12/2023	Soil strength: Strength of coarse grained soils	compression
F	4/14/2023	Soil strength: Strength of fine grained soils	test
M	4/17/2023	Soil strength: Mohr-Coulomb failure criteria	Direct
W	4/19/2023	Soil strength: Sample calculation of PSR, friction angles, cohesion, Su	shear
F	4/21/2023	Soil strength: Lateral earth pressure coefficients.	
M	4/24/2023	Soil strength: Sample calculation of active and passive earth pressure	Direct
W	4/26/2023	No class: Maine's day	shear
F	4/28/2023	Soil strength: Applications	
M	5/1/2023	Exams begin *	
W	5/3/2023	Final exam due date **	
F	5/5/2023	Semester ends	

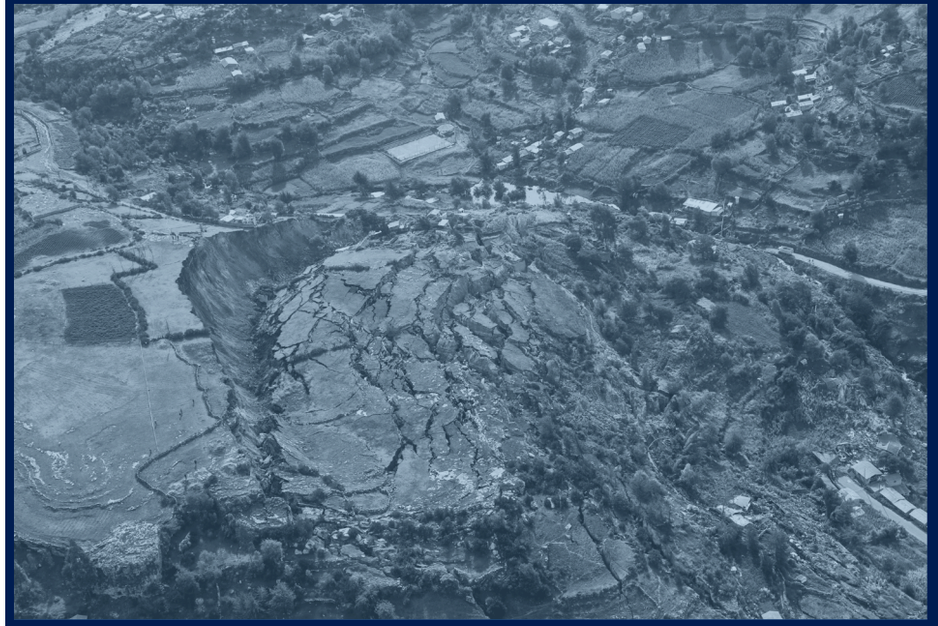
M: Monday - E: Wednesday - F: Friday

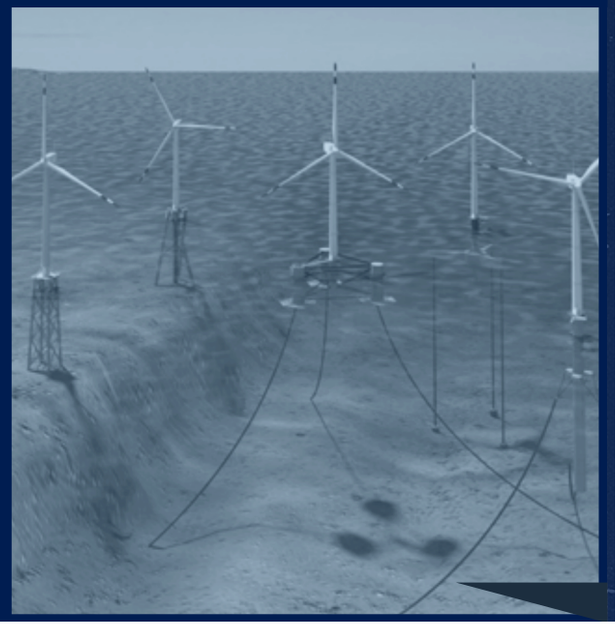
No class: Video lecture

No class

Exam due

* Exam assignment date





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Questions or comments?