

# Syllabus - CE 351 Introductory Soil Mechanics Fall 2018

## Department of Civil & Environmental Engineering, West Virginia University

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 Contact: Office in Engineering Sciences Building, Sixth Floor, Room 645, Phone: (304) 293-9942  
 Office Hours: Tuesday & Thursday 12 pm to 2 pm; also by appointment.  
 Text Book: Das and Sobhan, (2014) *Principles of Geotechnical Engineering, 9<sup>th</sup> edition*, CENGAGE Learning

Class Schedule: Fall Semester: August 16 to December 6, 2018  
 Lecture: Tue. & Thur 8:00 to 9:15 am, Advanced Engineering Research Building, Room AER-E135  
 Laboratory lectures are TUESDAYS, refer to page 4.

Attendance: You are expected to attend all classes and expected to come to class on time.  
**Attendance for all laboratory lectures and practicum's is required.**

Course Content: The following table lists the week and topics planned to be discussed.

Week #	Topic / Chapter(s)
1 TH	Ch 1 History of Geotechnical Engineering Ch 2 Origin of Soil
2 T/TH	Ch 2 Origin of Soil / Ch 3 Weight & Volume
3 T/TH	Ch 3 Weight & Volume - Quiz
4 T/TH	Ch 4 Plasticity / Ch 5 Classification - Quiz
5 T/TH	Ch 5 Classification / Exam I
6 T/TH	Ch 6 Compaction
7 T/TH	Ch 6 Compaction - Quiz
8 T/TH	Ch 7 Permeability
9 T/TH	Ch 7 Permeability / Exam II
10 T/TH	Ch 8 Seepage
11 T/TH	Ch 9 <i>In Situ</i> Stresses - Quiz
12 T/TH	Ch 9 <i>In Situ</i> Stresses
13 T/TH	Exam III / Ch 10 Stresses in Soil Masses
14 T/TH	Ch 11 Compressibility
15 T/TH	FALL RECESS
16 T/TH	Ch 11 Compressibility - Quiz
17 T/TH	Ch 12 Shear Strength
18 T	Final Exam TUESDAY, Dec 11 at 8-10 am

Grading: Final grades will be based on 90%, 80%, 70%... corresponding to A, B, C.  
 The instructor reserves the right to curve up.

Quizzes: Quizzes are used to assess student preparedness. Quizzes may be announced or unannounced (pop type). The quizzes will be based on lecture notes and selected text or study problems. If you are not in class on the day of a quiz, it is assumed you are not prepared. Quizzes are not eligible to be made-up if missed.

Examinations: Examinations are paced with the topics covered during the semester.  
**There will be a Final Comprehensive Exam for this course.**  
 The examinations will challenge the student's understanding of the topics covered by using:  
 1) Method problems which include numerical analysis problem type, and  
 2) Conceptual based problems challenging the student's understanding of theoretical concepts and practical knowledge.

Make-up Exams are only permitted based on WVU policy and official business with prior approval. Exams must be performed within five days of the original date and the instructor reserves the right to increase the exam difficulty.

Homework: Homework will **not** be assigned during the semester. Study problems and reading topics will be provided after completion of the topic(s). A solution key will be posted outside office ESB 645. You are responsible for reading the selected text sections. You are encouraged to do the text problems and the additional study problems.

Grade Distribution:

Grade Category	Percentage
Exam #I	20%
Exam #II	20%
Exam #III	20%
Final	20%
Laboratory	10%
Quizzes	10%
TOTAL	100%

**General Comment on Disruptions:**

- Talking: please respect class members.
- Questions: Encouraged during class. Study problem related questions will be addressed during office hours or by the Graduate Assistant.
- Electronic Equipment: Only hand-held calculators will be permitted for use during exams. Cell phone or I-phone type devices are not permitted as calculators. No cell phones, lap tops, e-book readers, or **any device capable of wireless electronic data communication are permitted during exams.** Silence phones during class.
- Food is disruptive and is not permitted during class or during lab.

Social justice statement:

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with Disability Services (293-6700).

Academic Conduct: West Virginia University Academic Integrity: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at [http://studentlife.wvu.edu/office\\_of\\_student\\_conduct/student\\_conduct\\_code](http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code).

**Course Objective:**

The objective of this course is to introduce the subject of soil mechanics and provide the basic theory and practice of geotechnical engineering to all civil engineering students. This course has a lecture component of 3 hrs per week, and a hands-on laboratory experience of 3 hrs per week. Topics covered include: soil structure and grain size; identification; particle analysis and classification; physical and engineering properties of soils; fundamental behavior of soils subjected to stress; groundwater and seepage through soils; compaction; consolidation; shear strength; soil compressibility and shear stress. Upon successful completion of this course, the students will be able to apply fundamentals of soil mechanics principles and laboratory testing to geotechnical engineering analysis, design, and construction of civil engineering projects.

**ABET Expected Learning Outcomes:**

Course Outcome Description	ABET Outcome*
Understand the selection of soil materials for civil engineering projects and works and be knowledgeable of the physical, chemical and mechanical behavior of soils used in civil engineering projects.	E
Perform soil characterization / classification, compaction, permeability, and strength tests on cohesive and granular soil through experimental testing. Evaluate test data and prepare written topical reports discuss experimental findings and practical applications and relevance.	B, E, G

\*ABET Program Outcomes:

- (B) Design, conduct experiments/analyze and interpret data
- (E) Identify, formulate, and solve civil engineering problems
- (G) Communicate effectively in oral, written, and electronic formats

# Introductory Soil Mechanics - Laboratory

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Graduate Assistant: Iuri Santos [iulirasantos@mix.wvu.edu](mailto:iulirasantos@mix.wvu.edu)  
ESB: B22

Text Book: Das and Sobhan, (2014) *Principles of Geotechnical Engineering, 9<sup>th</sup> edition*, CENGAGE Learning

Lab Manual: Lab handouts will be provided weekly

Schedule: Laboratory lectures are TUESDAYS:  
2:00 – 3:15 Engineering Sciences Building Rooms ESB E G78B  
3:20 – 4:50 Engineering Sciences Building Rooms ESB E 207  
Laboratory Practicum are TUESDAYS in ESB Room B20

Refer to the Laboratory Schedule on the following page for detailed information.

Organization: This laboratory is divided into groups. Refer to the Student Lab Group index table for your specific group and lab time.

Attendance: **Laboratory attendance is mandatory and will be considered in the report grade.**

Laboratory Report Submission: Lab report due dates will be assigned.

## **LATE REPORTS ARE NOT ACCEPTED**

General Comment on Work Submission:

Students are expected to submit calculations / graphs / sketches which are reasonably neat, complete yet concise; orderly and well organized in format. Sketches should be used to illustrate and summarize the design. Calculations and sketches should be presented in pencil on either engineering quadrille paper or plain white paper measuring: 8-1/2" x 11". Multiple pages must be stapled.

As a general guideline of the quality of the work ask yourself the following questions:

- 1) Does this work, upon initial inspection and review appear to be that of a professional or that of a disorganized high school student?
- 2) Upon more detailed inspection, could another engineer follow / review/ verify your work or do you feel confident that you could interpret this work if you looked at it in six weeks or six years?

Grading: For work submitted that does not meet the guidelines noted above, point deductions will be applied, or the assignment will be returned without a grade.

Cheating: Cheating is considered the act of submitting someone else's work as your own. If this occurs, and be well advised that it is checked, we will fail the assignment. If the problem repeats, then the matter will be submitted to the appropriate university office.