

CIVL354 - Soil Mechanics											
Department: Civil Engineering											
Program Name: Civil Engineering	Program Code: 22										
Course Number: CIVL354	Credits: 4 Cr										
<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> Elective Course											
Prerequisite(s): CIVL353											
Catalog Description: Introduction of engineering problems involving soils. Soil compaction. Effective stress concept. Permeability and its measurement. Seepage. One and two dimensional flow conditions. Flow nets. Stresses in a soil mass. Consolidation process. Immediate and consolidation settlement. Terzaghi's theory of one-dimensional consolidation. Degree of consolidation. Shear strength of soils. Lateral earth pressure theories: Rankine and Coulomb wedge theories. Stability of retaining walls. Slope stability.											
Course instructor: Dr. Şerife Öncü Sarper (Office no: CE 121) e-mail: serife.oncu@emu.edu.tr											
Course Web Page: http://staff.emu.edu.tr/serifeoncu/en/teaching/CIVL354											
Textbook(s): <ol style="list-style-type: none"> 1) R. F. Craig, Soil Mechanics, 7th edition, Chapman & Hall, 2004. 2) CIVL354 Soil Mechanics, Lecture Notes, Prepared by Zalihe Nalbantoğlu, 1st Edition, 2010. 3) J. E. Bowles, Physical and Geotechnical Properties of Soils, McGraw-Hill, 1989. 4) B. M. Das, Principles of Geotechnical Engineering, PWS -Kent, 1990. 5) R. D. Holtz and W. D. Kovacs, An Introduction to Geotechnical Engineering, Prentice-Hall, 1981. 											
Course assistants: Rowad E. Farah (CE 236) and Hamza Saeed (CE 138)											
Course Outline: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Week 1 17-21 February</td> <td>Introduction to Soil Mechanics</td> </tr> <tr> <td>Week 2-3 24 February- 6 March</td> <td>Soil Compaction and Effective Stress Concept</td> </tr> <tr> <td>Week 4 9-13 March</td> <td>Flow of Water in Soil: Permeability and Seepage</td> </tr> <tr> <td>Week 5 16-20 March</td> <td>Stresses in a Soil Mass</td> </tr> <tr> <td>Week 6-7 23 March- 3 April</td> <td>Compressibility of Soil, Consolidation theory</td> </tr> </table>		Week 1 17-21 February	Introduction to Soil Mechanics	Week 2-3 24 February- 6 March	Soil Compaction and Effective Stress Concept	Week 4 9-13 March	Flow of Water in Soil: Permeability and Seepage	Week 5 16-20 March	Stresses in a Soil Mass	Week 6-7 23 March- 3 April	Compressibility of Soil, Consolidation theory
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Week 8-9 6-17 April	Midterm Exam Week
Week 10 20-24 April	Consolidation Settlement Calculations
Week 11-12 27 April- 8 May	Shear Strength of Soils
Week 13 11-15 May	Lateral Earth Pressure
Week 14 19-22 May	Slope Stability
Week 15-16 27 May- 13 June	Final Examinations

Course Learning Outcomes:

At the end of the course the students will be able to:

1. Understand the basic concepts related to soil compaction and compaction tests,
2. Understand the flow in soils and the flow net,
3. Calculate the geostatic stresses and the stresses transferred to underlying soils applied by the superstructural loads,
4. Deal with the estimation of compressibility and settlement properties of soils for shallow foundation footings design,
5. Be familiar with soil shear strength tests and determine which test is needed in designing civil engineering projects and/or solving engineering problems,
6. Understand the lateral earth pressure and slope stability problems in soils

Class Schedule:

4 hrs of lectures per week

Laboratory Schedule:

1 hr of tutorial/laboratory per week

	Method	No	Percentage
Assessment	Midterm Exam(s)	1	35 %
	Lab Reports	8	10 %
	Quizzes	2	10 %
	Final Examination	1	45 %

NG Policy:

Attendance will be taken every lecture hour. Students should write their names and sign the attendance document in order to prove that they attend to the lecture. Any student who has poor interest in the course, with poor attendance (less than 70%) or with lack of exams (more than one) will be given NG (nil grade). Participation of the laboratory studies are obligatory. The students' full attendance is compulsory for the laboratory studies. The students who do not satisfy this condition will get NG. This rule will be followed strictly.

Make-up Exam:

Any student who missed one of the exams (Midterm or Final) and has a valid written reason can take MAKE-UP Exam. Students have to talk to their instructors within 3 days after the exam. Make-up examination will be offered after final examination.

There will be no make-up exam for Quizes.

Re-sit Exam:

The students with grades D-, F or on probation may take RE-SIT Exam.

LABORATORY STUDIES:

Laboratory is an important part of this course and participation of the laboratory studies and report submission are obligatory.

If the students do not attend the experiment, his/her report will not be accepted!

Copies of the same report will be marked as 0 (zero).

There will be no make-up for Laboratory studies and reports.

For the laboratory exemptions for the students who are repeating the course; the students need minimum 7 (out of 10) for their previous laboratory mark. Otherwise, they have to repeat all of the experiments and submit the lab. reports.

Contribution of Course to Criterion 5

Credit Hours for:

Mathematics & Basic Science : 0

Engineering Topic and Design : 4

General Education : 0

Relationship of Course to Student Outcomes

The course makes significant contributions to the following student outcomes:

- an ability to apply knowledge of mathematics, science, and engineering.
- an ability to design and conduct experiments, as well as to analyze and interpret data.
- an ability to identify, formulate, and solve engineering problems.
- an understanding of professional and ethical responsibility.

Prepared by: Dr. Şerife Öncü Sarper

Date Prepared: SPRING 2019-2020