ECTS

ΕΥΡΩΠΑΪΚΟ ΣΥΣΤΗΜΑ ΜΕΤΑΦΟΡΑΣ ΑΚΑΔΗΜΑΪΚΩΝ ΜΟΝΑΔΩΝ ΣΤΗΝ ΕΥΡΩΠΑΪΚΗ ΕΝΩΣΗ

(B) Course information in english

General course information:

Course title:	SOIL MECHANICS II	**Course code:**	CE06_G04
Credits:	5	**Work load (hours):**	126
Course level:	Undergraduate ☑	Graduate ☐	
Course type:	Mandatory ☑	Selective ☐	
Course category:	Basic ☑	Orientation ☐	
Semester:	6th	**Hours per week:**	4

Course objectives (capabilities pursued and learning results):

Soil Mechanics II as a course is based on the fundamental knowledge of the nature of soil and its mechanical behaviour, and applies it on solving a series of practical technical problems, such as water seepage through soil, time dependence of consolidation settlements, the design of gravity retaining walls, the estimation of the stability of earth slopes and of the bearing capacity of shallow foundations. The emphasis of the course is not on providing a bulk of design methodologies, but on understanding of mechanisms with the use of "simple" models.

The students absorb the principles of the design of geotechnical structures and are ready to apply specific design methodologies in an accurate manner in courses that follow.

Prerequisites:

Knowledge of Soil Mechanics (nature of soil, soil stresses and strains, Mohr's circle, shear strength under undrained and fully drained conditions, soil consolidation, flow through soil)

Instructor's data:

Name:	Polyxeni Kallioglou
Level:	Lecturer
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Other tutors:	-

Specific course information:

Week No.	Course contents	Hours	
		Course attendance	**Preparation**
1	Introduction – Water seepage through soil	4	
2	1D flow through soil & Darcy's law *1st set of applications: A*	4	2
3	2D flow through soil *1st set of applications: B – 1st homework*	4	2
4	Time dependence of consolidation *2nd set of applications: A*	4	2
5	Foundation settlements *2nd set of applications: B – 2nd homework*	4	2
6	Rankine soil pressures: Active and Passive failure	4	2
7	Coulomb soil thrust: Active and Passive failure *3rd set of applications: A*	4	2
8	Design of gravity walls retaining dry and saturated soil *3rd set of applications: B – 3rd homework*	4	2
9	*Midterm exam* – Planar failure of soil slopes	4	10
10	Circular failure of soil slopes *4th set of applications – 4th homework*	4	2
11	Limit equilibrium of shallow footing	4	1
12	Bearing capacity of shallow foundations (Terzaghi) *5th set of applications: A*	4	2
13	Bearing capacity of shallow foundations (Meyerhof, Vesic) *5th set of applications: B – 5th homework*	4	2
14	Bearing capacity of shallow foundations (EC7)	4	1

Additional hours for:			
Class project	**Examinations**	**Preparation for examinations**	**Educational visit**
10	3	25	

Suggested literature:

- Κ. Γεωργιάδης & Μ. Γεωργιάδης : ΣΤΟΙΧΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ, Εκδόσεις Ζήτη, 2009
- Γ. Γκαζέτας : ΣΗΜΕΙΩΣΕΙΣ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ, Εκδόσεις ΕΜΠ
- Μ. Καββαδάς : ΣΤΟΙΧΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ, Εκδόσεις ΕΜΠ
- Θ. Τίκα : ΣΗΜΕΙΩΣΕΙΣ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ, ΑΠΘ, 2014
- G. Barnes : ΕΔΑΦΟΜΗΧΑΝΙΚΗ: Αρχές και Εφαρμογές, Εκδόσεις Κλειδάριθμος, 2005
- J. Bowles : FOUNDATION ANALYSIS & DESIGN, McGraw-Hill Inc, 5th Edition, 1995
- M. Budhu : SOIL MECHANICS & FOUNDATIONS, John Wiley & Sons, Inc, 1999
- Das & Sobhan, PRINCIPLES OF GEOTECHNICAL ENGINEERING, Cengage Learning, 2016
- Laurence D. Wesley, FUNDAMENTALS OF SOILS MECHANICS FOR SEDIMENTARY AND RESIDUAL SOILS, John Wiley & Sons, Inc, 2010
- Lambe & Whitman , SOILS MECHANICS, John Wiley & Sons, 1969

Teaching method *(select and describe if necessary* - **weight***):*		
Teaching	☑	50%
Seminars	☐	……%
Demonstrations	☐	……%
Laboratory	☐	……%
Exercises	☑	50%
Visits at facilities	☐	……%
Other *(describe):* ……	☐	……%
Total		100%

Evaluation method *(select)*- **weight:**				
	written	%	*Oral*	%
Homework	☐		☐	
Class project	☐		☐	
Interim examination	☑	20	☐	
Final examinations	☑	70	☐	
Other *(describe):* Optional two tests during the semester (exculpatory) or participation only in the final selection	☑	100	☐	