ECTS

ΕΥΡΩΠΑΪΚΟ ΣΥΣΤΗΜΑ ΜΕΤΑΦΟΡΑΣ ΑΚΑΔΗΜΑΪΚΩΝ ΜΟΝΑΔΩΝ ΣΤΗΝ ΕΥΡΩΠΑΪΚΗ ΕΝΩΣΗ

(B) Course information in english

General course information:

Course title:	Special topics of Soil Mechanics	**Course code:**	ΓΕ1106
Credits:	6	**Work load (hours):**	120
Course level:	Undergraduate ☒	Graduate ☐	
Course type:	Mandatory ☐	Selective ☒	
Course category:	Basic ☐	Orientation ☒	
Semester:	9th	**Hours per week:**	4

Course objectives (capabilities pursued and learning results):

The course covers the following subjects: Mohr cycles and stress paths, pore water pressure, laboratory tests for the determination of stress – strain relation, mechanical behavior of soil under undrained and fully drained conditions, shear strength and critical state theory, residual shear strength, soil stiffness, effect of soil structure, stress history, strain magnitude and strain rate on soil behavior, assessment of design soil parameters.

The students absorb the above knowledge and are ready to interpret geotechnical data, analyse geotechnical problems, choose the appropriate tests for the determination of stress – strain relation, predict soil behaviour and assess design soil parameters.

Prerequisites:

Soil Mechanics I
Soil Mechanics II
Experimental Soil Mechanics

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	Stresses, strains and Mohr cycles – Stress paths	4	
2	Pore water pressure – Parameters A and B	4	2
3	Laboratory tests for the determination of stress – strain relation	4	2
4	Mechanical behavior of soil under undrained conditions	4	2
5	Mechanical behavior of soil under fully drained conditions	4	2
6	Shear strength of sands	4	2
7	Shear strength of cohesive soils	4	2
8	Soil stiffness : Stiffness modulus and damping ratio	4	2
9	Critical state theory	4	2
10	Critical state theory	4	2
11	Residual strength of soils	4	2
12	Effect of soil structure, stress history, strain magnitude and strain rate on soil behavior	4	2
13	Assessment of design soil parameters	4	2
14	Pre – failure soil state – Elastic wall – Yield surfaces – Theory of plasticity on soils	4	2

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

Suggested literature:

- Μ. Καββαδάς : ΣΤΟΙΧΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ, Εκδόσεις ΕΜΠ
- Θ. Τίκα : ΣΗΜΕΙΩΣΕΙΣ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ ΙΙΙ, ΑΠΘ, 2014
- G. Barnes : ΕΔΑΦΟΜΗΧΑΝΙΚΗ: Αρχές και Εφαρμογές, Εκδόσεις

Κλειδάριθμος, 2005

- M. Budhu : SOIL MECHANICS & FOUNDATIONS, John Wiley & Sons, Inc, 1999
- R.H.G. Parry : MOHR CIRCLES, STRESS PATHS AND GEOTECHNICS, E & FN SPON, 1995
- A.N. Schofield & C.P. Wroth : CRITICAL – STATE SOIL MECHANICS, McGraw Hill Book Co, London, 1968

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	☑	30	☐	
Class project	☐		☐	
Interim examination	☐		☐	
Final examinations	☑	70	☐	
Other *(describe):*	☐		☐	