

1.1.1 Soil mechanics II

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	FEQ003	SEMESTER	5th
COURSE TITLE	Soil mechanics II		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
	4	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Scientific Field		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://elearning.cm.ihu.gr/course/view.php?id=428		

LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> <p>The aim of the course is to help the student understand the basic principles of Soil Mechanics, to consolidate knowledge regarding the behavior of the “soil” as a civil engineering material and to develop the ability to computationally address basic problems in classic applications of Soil Mechanics. Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Recognize and understand the basic characteristics of the behavior of different types of soils. • Distinguish and comprehend the parameters related to the bearing capacity of the soil and to the developing settlements in the soil. • Calculate the bearing capacity of the soil as well as the developing settlements in the case of surface foundations. • Calculate the horizontal soil stresses and earth pressures. • Combine the individual soil properties and characteristics and be able to differentiate and adapt estimation and computation procedures based on the particular parameters of each examined case study. • Synthesize solutions based on the theories that have been taught, evaluating the requirements of the problem at hand, being able to support the proposed solutions, and compare by choosing the most appropriate among different approaches.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

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| Search for, analysis and synthesis of data and information, with the use of the necessary technology | Project planning and management |
| Adapting to new situations | Respect for difference and multiculturalism |
| Decision-making | Respect for the natural environment |
| Working independently | Showing social, professional and ethical responsibility and sensitivity to gender issues |
| Team work | Criticism and self-criticism |
| Working in an international environment | Production of free, creative and inductive thinking |
| Working in an interdisciplinary environment | |
| Production of new research ideas | Others... |
| | |

The course contributes to the following skills:

- Search, analysis and synthesis of data and information
- Decision-making
- Working independently
- Project planning
- Self awareness exercise

SYLLABUS

Examination of soil behavior as a material involved in Civil Engineering constructions with the aim of solving problems related to soil bearing capacity, developing settlements as well as lateral earth pressures. Content of theory lectures and practical exercises:

- Influence of external loads on developing soil stresses.
- Bearing capacity of soil in shallow foundations.
- Settlements of granular and cohesive soils, soil consolidation.
- Behavior of soils under drained and undrained conditions.
- Earth pressures and retaining structures.
- Introduction to the current regulatory framework (Eurocode 7).

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Lecture presentations using computer and projector, in person or by teleconference (remotely) if required. Support of the learning process through the e-learning platform and electronic communication with students (online announcements and comments, e-mail, announcements on the Department's website etc.). If required, support of students by using teleconference tools and software.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-</i>	Activity	Semester workload
	Lectures	26
	Practice/exercises	26
	Practice/exercises	30
	Individual study	48

<i>directed study according to the principles of the ECTS</i>	Course total (26 hours workload per ECTS credit)	130
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Written final examination including:</p> <ul style="list-style-type: none"> • Short answer and Multiple Choice Theoretical Questions (Formative and/or Inferential) • Solving problems-exercises <p>Written assignments and oral examination including:</p> <ul style="list-style-type: none"> • Solving problems-exercises • Assessment of knowledge on basic subjects of the course 	

ATTACHED BIBLIOGRAPHY

- [In Greek] Γεωργιάδης Κ., Γεωργιάδης Μ. (2009), "Στοιχεία Εδαφομηχανικής", Εκδόσεις ΖΗΤΗ, Θεσσαλονίκη, ISBN: 978-960-456-157-5
- [In Greek] Barnes G.E. (2014), "Εδαφομηχανική: Αρχές και Εφαρμογές (3η έκδοση)", Εκδόσεις Κλειδάριθμος, Αθήνα, ISBN: 978-960-461-578-0
- [In Greek] Καββαδάς Μ. (2016), "Στοιχεία Εδαφομηχανικής (2η έκδοση)", Εκδόσεις Τσότρας, ISBN: 978-618-5066-62-8
- Das B.M. (2019), "Advanced Soil Mechanics", Taylor and Francis (5th edition), New York.
- Verruijt A. (2018), "An Introduction to Soil Mechanics", Springer
- [In Greek] Budhu M. (2020), "Εδαφομηχανική και Θεμελιώσεις", Εκδόσεις Gotsis, Πάτρα, ISBN: 978-960-9427-90-6