

1.1.1 Deep Excavations and Earth Retaining Structures

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	FEQ010	SEMESTER	8th
COURSE TITLE	Deep Excavations and Earth Retaining Structures		
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>	Specialization Course		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)			

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>Consult Appendix A</p> <ul style="list-style-type: none"> • Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area • Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B • Guidelines for writing Learning Outcomes 								
<p>Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • To recognize the different types of Deep Excavations and Earth Retaining Structures. • Be able to perceive and evaluate soil and structure's parameters related to excavations. • To be able to desing and assess basic types of supports in simplified soil cases under simple and complex loading cases. • To propose and/or synthesize solutions based on the theories she/he has been taught for the most appropriate choice of support type, evaluating the requirements of the problem she/he faces each time. 								
<p>General Competences</p> <p><i>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?</i></p> <table> <tr> <td>Search for, analysis and synthesis of data and information, with the use of the necessary technology</td> <td>Project planning and management</td> </tr> <tr> <td>Adapting to new situations</td> <td>Respect for difference and multiculturalism</td> </tr> <tr> <td>Decision-making</td> <td>Respect for the natural environment</td> </tr> <tr> <td></td> <td>Showing social, professional and ethical responsibility and</td> </tr> </table>	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		Showing social, professional and ethical responsibility and
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							
	Showing social, professional and ethical responsibility and							

<i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>Others...</i>
<ul style="list-style-type: none"> • Decision making • Design of assignments • Student individual project • Promotion of the free, creative and inductive thinking 	

SYLLABUS

<p>Study, analysis and designing of various types of excavations and retaining walls. It includes the determination of the loading and the designing and construction configuration of the elements under study based on the modern regulations.</p> <p>Content of theory lectures and practical exercises:</p> <ul style="list-style-type: none"> • Presentation of excavation methods and types of retaining walls (flexible, with or without anchors, rigid, support systems, etc.) • Connection with soil mechanics (soil characteristics, horizontal soil stresses). • Methods for calculating earth pressures during the design of retaining walls (Rankine, Coulomb, regulatory framework based on EC7, etc.). • Study and designing of different types of retaining walls. • Addressing issues related to groundwater. • Special cases of retaining walls (diaphragm walls, reinforced or reinforced soil, use of geotextiles, etc.).

TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY</p> <p><i>Face-to-face, Distance learning, etc.</i></p>	Face to face.		
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p><i>Use of ICT in teaching, laboratory education, communication with students</i></p>			
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>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></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	Activity	Semester workload	
	Lectures	26	
	Practice/exercises	26	
	Practice/exercises	30	
	Individual study	48	
	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>	<ol style="list-style-type: none"> 1. Individual project aiming at better understanding the teaching concepts 2. Final written exam at the end of the semester (in Greek language) 		

<i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	
--	--

ATTACHED BIBLIOGRAPHY

[In Greek] Κωμοδρόμος Α.Μ. (2019), "Θεμελιώσεις, Αντιστηρίξεις: οριακή ισορροπία – αριθμητικές μέθοδοι (2η έκδοση)", Εκδόσεις Κλειδάριθμος, ISBN: 978-960-461-952-8

[In Greek] Κωστόπουλος Σ.Δ. (2008), "Γεωτεχνικές Κατασκευές ΙΙ", Εκδόσεις Ίων, ISBN: 978-960-411-657-7

[In Greek] Κωστόπουλος Σ.Δ. (2008), "Γεωτεχνικές Κατασκευές Ι (2η έκδοση)", Εκδόσεις Ίων, ISBN: 960-411-563-4

[In Greek] Αναγνωστόπουλος Χ., Χατζηγώγος Θ., Αναστασιάδης Α., Πιτλάκης Δ. (2012), "Θεμελιώσεις-Αντιστηρίξεις και Γεωτεχνικά Έργα", Εκδόσεις Αϊβάζης, Θεσσαλονίκη, ISBN: 978-960-549-000-3

[In Greek] Γεωργιάδης Κ., Γεωργιάδης Μ. (2009), "Στοιχεία Εδαφομηχανικής", Εκδόσεις ΖΗΤΗ, Θεσσαλονίκη, ISBN: 978-960-456-157-5