

## 1.1.1 Deep Foundations

### GENERAL

<b>SCHOOL</b>	Engineering		
<b>ACADEMIC UNIT</b>	CIVIL ENGINEERING		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	FEQ009	<b>SEMESTER</b>	8th
<b>COURSE TITLE</b>	Deep Foundations		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	4	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Specialization Course		
<b>PREREQUISITE COURSES:</b>			
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>			

### LEARNING OUTCOMES

<p><b>Learning outcomes</b></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"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>								
<p>The aim of the teaching is the understanding of the concepts and theoretical principles of deep foundations and the ability to deal computationally with basic problems in this subject.</p> <p>Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• To recognize the various types of deep foundations and especially pile foundations.</li> <li>• To recognize, understand and be able to evaluate the cases in which the use of deep foundation is required.</li> <li>• To distinguish and understand the basic physical and mechanical soil parameters related to the study and analysis of deep foundations.</li> </ul>								
<p><b>General Competences</b></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 style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and</i></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>		<i>Showing social, professional and ethical responsibility and</i>
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<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>							
<i>Decision-making</i>	<i>Respect for the natural environment</i>							
	<i>Showing social, professional and ethical responsibility and</i>							

<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"> <li>• Decision making</li> <li>• Design of assignments</li> <li>• Student individual project</li> <li>• Promotion of the free, creative and inductive thinking</li> </ul>	

## SYLLABUS

Study, analysis and design of various types of deep foundations and especially pile foundations. It includes the determination of the loading, the calculation of the intensive state and the process of designing, reinforcement and structural configuration based on the modern regulations.

Content of theory lectures and practical exercises:

- Introduction to the types of deep foundations and their construction methods
- Single pile and pile group bearing capacity study under axial loading
- Single pile and pile group bearing capacity study under horizontal loading
- Calculation of single pile and pile group settlements
- Special topics for the study of pile foundations (pile-soil interaction, non-linear analysis, negative friction, test loads, etc.).

## TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;"><b>DELIVERY</b></p> <p style="text-align: center;"><i>Face-to-face, Distance learning, etc.</i></p>	Face to face.	
<p style="text-align: center;"><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b></p> <p style="text-align: center;"><i>Use of ICT in teaching, laboratory education, communication with students</i></p>		
<p style="text-align: center;"><b>TEACHING METHODS</b></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>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	26
	Practice/exercises	26
	Practice/exercises	30
	Individual study	48
	Course total (26 hours workload per ECTS credit)	<b>130</b>
<p style="text-align: center;"><b>STUDENT PERFORMANCE EVALUATION</b></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>	<ol style="list-style-type: none"> <li>1. Individual project aiming at better understanding the teaching concepts</li> <li>2. Final written exam at the end of the semester (in Greek language)</li> </ol>	

## ATTACHED BIBLIOGRAPHY

[In Greek] Αναγνωστόπουλος Α.Γ., Παπαδόπουλος Β.Π. (2004), "Θεμελιώσεις με Πασσάλους", Εκδόσεις Συμεών, ISBN: 978-960-7888-50-2

[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 Ι (2η έκδοση)", Εκδόσεις Ίων, ISBN: 960-411-563-4

[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