

1.1.1 Geo-environmental Engineering

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	FEQ008	SEMESTER	7th
COURSE TITLE	Geo-environmental Engineering		
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 <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>Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Understand the basic parameters related to subsoil pollution both at the level of waste management and in terms of geotechnical/geological characteristics. • Distinguish, recognize, and be able to evaluate cases of subsoil pollution. • To perceive and understand the causes of pollution in each examined case and to be able to estimate the level of the problem. • To propose solutions regarding the restoration of pollution that has occurred in specific case studies. • Formulate solutions based on the knowledge acquired during the lessons, assessing the particular requirements of the problem at hand.
<p>General Competences <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> <p><i>Search for, analysis and synthesis of data and</i> <i>Project planning and management</i></p>

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

The course contributes to the following skills:

- Search for, analysis and synthesis of data and information
- Decision-making
- Working independently
- Project planning
- Respect for the natural environment
- Working in an interdisciplinary environment

SYLLABUS

The course focuses on subsoil pollution and protective and remedial measures to be taken, regarding the management (transportation, storage and disposal) of waste of various kinds (solid and liquid waste, toxic substances, etc.).

Content of theory lectures and exercises:

- Introduction to the subject.
- Presentation of different forms of subsoil pollution (contamination from the management of solid and liquid waste, toxic substances, etc.). Effects of pollutants on the environment and on humans.
- Efficient waste management procedure in relation to the subsoil - Related code and legislation provisions. Protective measures to prevent pollution. Selection criteria and design of waste containment or disposal facilities and sites.
- Measures to address soil pollution - decontamination methods and remediation techniques.
- Case studies related to subsoil pollution problems.

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-directed study according to the principles of the ECTS</i>	Activity	Semester workload
	Lectures	26
	Practice/exercises	26
	Practice/exercises	30
	Individual study	48
Course total (26 hours workload per ECTS credit)	130	

<p>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"> • Theoretical knowledge and judgment questions on course subjects • Solving problems-exercises <p>Written assignment (compulsory) which includes:</p> <ul style="list-style-type: none"> • Processing and solving exercises-problems • Assessment of understanding key concepts of the course
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ATTACHED BIBLIOGRAPHY

- [In Greek] Καββαδάς Μ. (2013), "Στοιχεία Περιβαλλοντικής Γεωτεχνικής", Εκδόσεις Τσότρας, ISBN: 978-618-80741-0-1
- [In Greek] Βουδούρης Κ.Σ.. (2009), "Υδρογεωλογία περιβάλλοντος. Υπόγεια νερά και περιβάλλον", Εκδόσεις ΤΖΙΟΛΑ, ISBN: 978-960-418-170-4