1.1.1 Special Topics in Geotechnical Engineering

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ΓΕΩ007	**SEMESTER**	7th
COURSE TITLE	Special Topics in Geotechnical Engineering		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
	4	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialization Course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning outcomes

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.

Consult Appendix A

- *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*

Upon successful completion of the course, the student will be able to:

• To recognize, understand and be able to evaluate the basic soil parameters related to its mechanical behavior under different loading conditions.

• To be able to understand the role of underground water and its multifaceted influence on soil behavior.

• To be able to identify the basic elements required for the design of special geotechnical engineering projects such as embankments, slopes, landslide protection projects, dams.

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?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues

Team work *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

The course contributes to the acquirement of the following capabilities:
- Search, analysis and synthesis of information and data using the appropriate technology
- Decision making
- Student individual project
- Design of geostructures
- Respect of the physical environment

SYLLABUS

Deepening in soil behavior and study of special geotechnical engineering projects such as embankments, slopes, landslide protection projects, dams.

Content of theory lectures and practical exercises:
- Connection with Soil Mechanics (soil characteristics, soil stresses, bearing capacity and soil settlements, active and passive earth pressures).
- Intensive soil condition and loading history, stress paths, soil failure modes, residual soil strength, etc.
- Influence of water on the mechanical behavior of soils.
- Introduction to the design of special geotechnical engineering projects (embankments, slopes, landslide protection projects, dams).

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	
TEACHING METHODS *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.* *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*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *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*	Final written exam that comprises: •Theoretical questions of knowledge and critical thinking • Solving of problems-exercises Delivering of an individual project that comprises: • Processing and solving of subjects pertinent to the study of underground structures-tunnels • Examination of the basic concepts of the subject

Activity	*Semester workload*
Lectures	26
Practice/exercises	26
Practice/exercises	30
Individual study	48
Course total (26 hours workload per ECTS credit)	***130***

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

ATTACHED BIBLIOGRAPHY

[In Greek] Κωστόπουλος Σ.Δ. (2008), "Γεωτεχνικές Κατασκευές ΙΙ", Εκδόσεις Ίων, ISBN: 978-960-411-657-7
[In Greek] Ρόζος Δ. (2008), " Βελτίωση γεωτεχνικής συμπεριφοράς γεωλογικών σχηματισμών", Ηλεκτρονικό σύγγραμμα (διάθεση δωρεάν)
[In Greek] Χριστούλας Στ. (1998), "Επιλογές Εφαρμοσμένης Γεωτεχνικής Μηχανικής", Εκδόσεις Συμεών, ISBN: 978-960-7888-11-1
[In Greek] Barnes G.E. (2014), "Εδαφομηχανική: Αρχές και Εφαρμογές (3η έκδοση)", Εκδόσεις Κλειδάριθμος, Αθήνα, ISBN: 978-960-461-578-0