1.1.1 Geology for Engineers

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ΓΕΩ001	**SEMESTER**	3rd
COURSE TITLE	Geology for Engineers		

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	4
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*	Scientific Background
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:

- Process, analyze, and utilize information related to the role of geological formations and structures, as well as groundwater, in the environment and in technical projects.
- Evaluate the geotechnical behavior of geological formations under different conditions.
- Assess potential geotechnical hazards and make decisions regarding preventive measures and/or mitigation.
- Evaluate environmental parameters and hazards based on the hydrogeological and mechanical characteristics of geological formations.

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	*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

Working independently	*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…*
	…….

Search for, analysis and synthesis of data and information, using the necessary technologies
• Work in an interdisciplinary environment
• Autonomous work
• Decision making
• Project planning and management
• Criticism and self-criticism
• Production of free, creative and inductive thinking

SYLLABUS

Content of lectures:
-Creation-composition and evolution of the earth, theory of lithospheric plates.
-General Geology (stratigraphy, tectonics, fundamental concepts, illustrations on maps).
-Geomorphology, disintegration, erosion, karst phenomena with an emphasis on their effects on the environment and on technical projects.
-Earthquakes. Genesis, valuation, seismic risk, effects on technical projects and the environment.
-Geotechnical problems: groundwater, landslides, settlements and effects on technical projects .
-Classifications of geological formations. Rock mass classification (RQD, GSI)
Exercise Contents:
-Geometric orientation of geological interfaces
-Topographic maps
-Construction of geological sections
-Geological Sections and assessment of subsoil geotechnical conditions
-Rock mass classification

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*	-Additional material is provided via a dedicated e-learning website -Zoom platform -Communication via e-mail
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*	

Activity	***Semester workload***
Lectures	26
Practice/exercises	26
Individual study	52
Course total (26 hours workload per ECTS credit)	***104***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice*	-Final written exam at the end of the semester that comprises: -Theoretical questions of knowledge and critical thimking,

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 *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	problem solving, multiple choice test. -Individual project

ATTACHED BIBLIOGRAPHY

1. [In Greek]. G. Koukis, N. Sambatakakis. Technical Geology 2nd Edition. Papasotirio Publications. Athens 2019. ISBN: 978-960-471-130-1
2. [In Greek]. Seraphim Savvidis. Environmental Engineering Geology. S.G.S. Publications Seraphim G. Savvidis, Kozani 2014. ISBN: 978-618-80374-0-3
3. [In Greek]. Dimitris Papanikolaou, Geology, The Science of the Earth, S. Patakis Publications, 2007.
4. F. G. Bell. Engineering Geology 2nd. Ed. Elsevier Ltd. 2007
5. John C. Lommler. Geotechnical Problem Solving. John Wiley Sons, 2012.