COURSE OUTLINE

(1) General information

FACULTY/SCHOOL	TECHNOLOGY			
DEPARTMENT	ENVIRONMENTAL SCIENCES			
LEVEL OF STUDY	*Undergraduate*			
COURSE UNIT CODE	NEW **COURSE**	**SEMESTER**	2°	
COURSE TITLE	ENVIRONMENTAL GEOLOGY			
INDEPENDENT TEACHING ACTIVITIES in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits			**WEEKLY TEACHNG HOURS**	**CREDITS**
THEORETICAL BACKGROUND			4	5
LABORATORY PRACTICE				
TOTAL				
COURSE TYPE Background knowledge, Scientific expertise, General Knowledge, Skills Development	BACKGROUND KNOWLEDGE			
PREREQUISITE COURSES:	NO			
LANGUAGE OF INSTRUCTION &EXAMINATION/ASSESSMENT:	GREEK			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES			
COURSE WEBSITE (URL)				

(2) LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.
It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

Guidelines for writing Learning Outcomes

Environmental Geology is concerned with the study of environmental impact (soil, water and air pollution) that is linked to geological processes in the interior and on the surface of the Earth, such as earthquakes, the presence and exploitation of various types of deposits, the soil mass movements, surface relief changes and on the other hand the effects associated with projects and activities (waste, sewage, waste, toxic substances, depleted mines and quarries, over-exploitation of natural and mineral resources, etc.). Professor Lekkas (1995) explains that environmental geology is the branch of geology that deals with the application of geological information to minimise environmental impact and maximise potential favourable conditions resulting from the use of the natural environment, i.e. in a broader sense, environmental geology is the branch of geoscience that

deals with the full range of human interventions in the natural environment. Sustainable development has as its basic condition the respect for the quality of life, without destroying the natural environment (prevention-reduction-restoration) or the possibility of meeting future needs. Therefore, the geological information related to the environment acquires special importance, because it is directly related to the quality of human life, i.e. human well-being, health, morals and safety. Because the environment directly affects the lives of humans and all living organisms, caring for it is the responsibility of all of us.

The aim of the course Environmental Geology is to provide skills to students so that the graduates of the department play an important role in dealing with complex environmental - developmental problems in the context of sustainable development through private and public bodies. Also among the objectives of the course are:

1. Students understand the basic concepts that are developed in the lesson.
2. Students should be able to consolidate the analysis of the geological processes that contribute to the shaping of the terrain of the earth's surface and its subterranean structure.
3. Students respond to the learning of basic tools for the implementation of projects / studies related to the specific subject. 4. Students should be able to communicate effectively (in writing and orally) in interdisciplinary groups and evaluate the viability of environmental plans. 5. Students should gather the necessary information about the soil and its geoenvironment, process it properly and use it for the design and construction of Technical Works.

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	*Project planning and management*
Adapting to new situations	*Respect for diversity and multiculturalism*
Decision-making	*Environmental awareness*
Individual/Independent work	*Social, professional and ethical responsibility and sensitivity to gender issues*
Group/Team work	*Critical thinking*
Working in an international environment	*Development of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Introduction of innovative research	*(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)*
	…….

- Search for, analyze and compose data
- Decision making
- Autonomous Work
- Teamwork
- Respect for the natural environment
- Practice criticism and self-criticism
- Promoting free, creative and inductive thinking

(3) COURSE CONTENT

Theory Outline

1. Introduction. Geosciences and their research subjects.
2. Cosmology - components of the universe.
3. Planet Earth (Age, Structure, Composition, Continents, Oceans, Lithospheric Plates, Earthquakes, Volcanoes).
4. Petrodiagnostics of Igneous Rock.
5. Rocks (Igneous, Sedimentary, Metamorphic).
6. Geological cycle, Orogenetic systems, Carbon cycle, Hydrological cycle, Elements of geomorphology and morphotectonics.
7. Introduction to Cartography. Global mapping system. Horizontal terrain embossing, scales, scale use,

contour lines.
8. Topographic maps - Topographic sections - Territorial slope.
9. Elements of Technical Geology.
10. Geological Section Design. Structure of folding cracks - calculation of displacements - kinematics of space.
11. Geology - Spatial Planning - Environment.
12. Elements of seismology. Seismic phenomena recording instruments.
13. Historical data of geological and seismic phenomena in Greece.

(4) TEACHING METHODS-ASSESSMENT

MODES OF DELIVERY **Face-to-face, in-class lecturing, distance teaching and distance learning etc.**	• Lectures in the amphitheatre and • Group discussion
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY **Use of ICT in teaching, Laboratory Education, Communication with students**	• Use of PowerPoint slides. • Videos of relevant material. • Communicating with students via e-mail. • Use of e-class
COURSE DESIGN **Description of teaching techniques, practices and methods:** **Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.** **The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.**	

Activity/Method	*Semester workload*
Lectures	65
Workshop	
Laboratory work	
Theory study	45
Weekly individual evaluation reports for laboratory exercises	15
Course total (25 hours of workload per credit unit)	***125***

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS **Detailed description of the evaluation procedures:** **Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.** **Specifically, defined evaluation criteria are stated, as well as if and where they are accessible by the students.**	***Students are assessed in Greek or English. The final grade is formed by tests which include:*** • Written exam: 70% of the final grade (A) • Assigned work: 30% of the final grade (B) **Final grade = 70% (A) + 30% (B)**

(5) SUGGESTED BIBLIOGRAPHY:

-Suggested bibliography

1. Dimopoulos G. and Makedon Th. (2007), “Technical Geology Problems”, Tziola Publications, Thessaloniki, ISBN: 978-960-418-152.
2. Kasidakis D. (2005), "Technical Geology", Theoretical part, teaching notes T.E.I. of Larissa.
3. Kasidakis D. (2005), "Laboratory Exercises of Technical Geology", teaching notes T.E.I. of Larissa.
4. Kokkinou E. (2015), "Environmental geology and geotechnology. Land and Sea Environment" Kallipos Repository, www.kallipos.gr, ISBN: 978-960-603-036-9.
5. Koukis G.H. and Sampatakakis N.S. (2002), "Technical Geology", Publisher: Papasotiriou, ISBN: 9789607530097
6. Misopolinos N.D. (1990), “Geology – Petrography”, Giahoudi-Giapoudi Publications, Thessaloniki, 1990.
7. Bandis K. S 2008, "Technical Geology", Publisher: Gutenberg ISBN 9789600112511.
8. Davi N.E. (1991), “General Geology Lessons”, Symmetry Publications, Athens 1991.
9. Rozos I.D. (2007), "Technical Geology" NTUA, Athens.
10. Savvidis S. (2014), "Environmental Technical Geology", Edition: 1/2014.
11. Hatzidimitriadis E.A. (1990), "Elements of General Geology", Aristotle University of Thessaloniki, Department of Geology.
12. Hatzidimitriadis E.A. (1991), "Geological Mapping", Aristotle University of Thessaloniki, Department of Geology.
13. De Paor, D.G. (1996), "Structural Geology and personal computers", Pergamon Press.
14. Push R. (1995), "Rock Mechanics on a Geological Base, Developments in Geotechnical Engineering", Elsevier.

-Complementary bibliography