

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	ENVIRONMENTAL ENGINEERING		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	GE5330	SEMESTER OF STUDY	3 ^o
COURSE TITLE	ECONOMIC GEOLOGY – ORE GEOLOGY		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Lectures, educational visits.		6	6
COURSE UNIT TYPE	SBC		
PREREQUISITES :	Evaluated knowledge of the course "Environmental Geology".		
LANGUAGE OF INSTRUCTION/EXAMS:	Greek/English		
COURSE DELIVERED TO ERASMUS STUDENTS	YES		
MODULE WEB PAGE (URL)	http://geope.teikoz.gr/undergraduate/ug_studies.htm		

2. LEARNING OUTCOMES

3.

Learning Outcomes
<ul style="list-style-type: none"> • <p>The lesson of « <i>Economic Geology</i>» contains the key concepts, categories, forms, ways and processes of formation and occurrence in nature of different kinds of ore deposits. Potential -Possible -Certain deposits of mineral raw materials. Energy and non-energy mineral raw materials. Critical and strategic minerals in Greece and developmental potential of the mining sector in Greece. Metallic and industrial minerals and aggregates in Greece. Macroscopic observation and microscopic examination of metallic minerals in metallographic microscope. The role of local communities in identifying and mining ores. Sustainable development in the mining sector of our country.</p> <p>On successful completion of this module the learner will be able to:</p> <ol style="list-style-type: none"> 1. Know the concepts associated with mineral exploration. 2. Be familiar with the different types and categories of ore deposits, which are related to the way of formation and other genetic issues, age, tectonics, mineralogical composition. 3. Analyze and synthesize the procedures for identifying ore deposits in continental and oceanic environments. 4. Make assessment of the economic viability of a deposit, based on current financial data. 5. Be fully informed about existing proven and possible ore reserves in Greece and their perspective uses. 6. Be knowledgeable about environmental protection in the context of sustainable development and exploitation of mineral raw materials.
General Skills
<p><i>Upon successful completion of the programme students will:</i></p> <ul style="list-style-type: none"> -have the basic theoretical and practical knowledge in the fields of the subject area of Geotechnology and Environmental Engineering -be able to properly apply the theoretical and practical knowledge acquired during the study period -be able to cover a wide spectrum of scientific and technical knowledge related to mining and geotechnical

projects as well as the sector of environmental reclamation

-have gained the necessary competencies to proceed to their second cycle study.

- Independent Work
- Teamwork
- Respect to natural environment
- Search, analyze and synthesize data and information, using necessary technologies

3. COURSE CONTENTS

Theory

- Introductory elements: definitions - concepts.
- Shapes and tissues of ore deposits.
- Ways to create ore deposits.
- Factors affecting the formation of deposits.
- Magmatic concentrations: Hydromagmatic - Hydrothermal - Subvolcanic - Volcanic.
- Deposition of gaseous fumaroles.
- Process of gaseous subsea and volcanic activity.
- Metamorphic ore deposits.
- Contact Metasomatos.
- Volcanosedimentary ore deposits.
- Residual and Mechanical concentrations.
- Oxidation and supergene enrichment.
- Evaporation.
- Chemical and biochemical sedimentation.
- Non-energy mineral raw materials in Greece.
- Energy Resources in Greece.
- Critical and Strategic Minerals.
- Institutional and Development Framework of Europe on Mineral Resources.
- Development Opportunities in Mining Sector.
- Roadmap for Sustainable Development.
- The Role of Local Communities.
- Special ore deposits.

Laboratory

- Macroscopic Description and Properties of Minerals.
- Description and identification of specific metallic minerals in metallographic microscope.

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In class rum, Face to face.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Χρήση Τ.Π.Ε. στη Διδασκαλία, στην Εργαστηριακή Εκπαίδευση, στην Επικοινωνία με τους φοιτητές</i>	Lectures assisting by power point presentations and group comprehension exercises. Educational tours. Contact instructor and students via email.	
TEACHING METHODS	Method description	Semester Workload
	Classroom lectures	50
	Laboratory exercises	25
	Autonomous study	15

	Total work load hours of lesson	90
ASSESSMENT METHODS <i>Περιγραφή της διαδικασίας αξιολόγησης</i>	Written examination on the theoretical background, oral presentations in classroom and assessment of laboratory skills regarding the macroscopic properties of these minerals and the metallographic microscope.	

5. RESOURCES

-Προτεινόμενη Βιβλιογραφία :

-Συναφή επιστημονικά περιοδικά:

- Charalampides G., 2005. «Ore Geology for Engineers of Geotechnical Direction of Institutes of Technology (TEI)». In Greek.
- Barnes J. W., 1995. «Ores and Minerals». John Wiley & Sons.
- Evans A. M., 1995. «Ore Geology and Industrial Minerals» Blackwell Science.
- Jensen M. L. & Bateman A. M., 1979 «Economic Mineral Deposits». John Wiley & Sons.
- Stanton R. L., 1972. «Ore Petrology». McGraw-Hill, N. York.

SBC: Specific Background Courses