

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	Department of Environmental Engineers/ Division of Environmental Geo-technology Engineering		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	GE5670	SEMESTER OF STUDY	6th
COURSE TITLE	Exploitation II		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Lectures, Field Work, Laboratory Exercises		4	5
COURSE UNIT TYPE	SC: Specialization Courses		
PREREQUISITES :	None		
LANGUAGE OF INSTRUCTION/EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	Yes		
MODULE WEB PAGE (URL)	http://geope.teikoz.gr/undergraduate/ug_studies.htm		

2. LEARNING OUTCOMES

Learning Outcomes
<p>The course aims to provide the necessary knowledge for subjects relevant to mine exploitation so that the students will be able to cope with similar subjects and especially with:</p> <ul style="list-style-type: none"> • Access to mineral deposits • Underground projects support • Ventilation of underground projects • Illumination of underground projects • Transportation and hoisting of excavated products • Methods for underground deposits exploitation • Measures for the treatment of underground excavations effects • Protection measures against water penetration combined with techniques for their collection and removal.
<p>General Skills <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.

On successful completion of this module the learner will be able to :

1. To be able to design an integrated underground exploitation.
2. To choose the right approach method and the right exploitation method.
3. To improve the mine productivity and to organize the production program.
4. To program the long term mine evolution and all the stages of the production cycle.

3. COURSE CONTENTS

- Definitions, Prospecting, Exploration, Development, Exploitation, Reclamation, Mine Production Cycle, Development of the mineral industry, methods for deposits evaluation.
- Open - pit planning, Pit limit analysis, Bench design, Road design. Methods employed in the main production phases (excavation, loading, hauling, waste disposal).
- Excavation methods: open pit mining, quarrying, open cast – strip mining, highwall mining, Alluvial mining, placer mining, solution mining.
- Economic aspects of slope angle, Slope stability, Economic aspects of cut-off grade, Production scheduling,
- Innovative mining methods, remote control, mechanization, automation, robotics, ocean mining, nuclear mining, space mining, clean mining.
- Case Studies

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Face – to - face	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Power point presentations and self-assessment test in the Blackboard. Students are contacted by e-mail.	
TEACHING METHODS	<i>Method description</i>	<i>Semester Workload</i>
	Lectures	45
	Field Work	10
	Laboratory Exercises	45
	Autonomous Study	25
	Total	125
ASSESSMENT METHODS	Written Examination, Oral Presentation, tests, written assignments. 1. Each lab exercise is examined orally and by a written test. The laboratory examination of each subject must be successful. 2. At the end of each lecture, students are asked to answer a number of questions related to the lecture. 3. For the final grade counts the performance in the laboratory exercises (45%), the field work (10%) and the written exam at the end (45%).	

5. RESOURCES

- *Recommended Book Resources:*

Hartman H.I. Mutmanský J.M. 2002 Introductory Mining Engineering New-York 2nd Ed. pp 570.

Hustrulid W.A. 1982 Underground Mining Methods Handbook Littleton, CO Society for Mining,

Metallurgy and Exploration

Peele, R (Ed.) 1941. Mining Engineer's Handbook, 3d ed., 2 vol. New York 708 pp.

Shuey S. 1999 Mining technology for the 21st century. Engineering and Mining Journal 200(4) WW-18-WW-24

Tien, J.C 1999 Practical Mine Ventilation Engineering Chicago 460 pp

S. Platias 2010, « Notes of the lesson Exploitation II» T.E.I. of Western Macedonia

J. Oikonomopoulos, 1991 "Mine Exploitation, Ventilation" , NTUA, Athens

I. Οικονομόπουλος 1977 "Transportation and Haulage" , NTUA, Athens

X. Tsoutrelis 1985 "Underground Exploitation Methods", NTUA, Athens