COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	ENVIRONMENTAL ENGINEERING		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	**GE5520**	**SEMESTER OF STUDY**	5
COURSE TITLE	MINING INFORMATION TECHNOLOGY		

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS Credits**
THEORY	1	2
LABORATORY EXERCISES	4	2
	5	**4**

COURSE UNIT TYPE	SC
PREREQUISITES :	COMPUTERS
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

Learning Outcomes

The course aims to enable students to:

- Use integrated computer applications in specialised problems of mining projects
- Generate exploration databases and proceed with geological and geotechnical modeling
- Design surface and underground mines
- Optimise their designs based on financial and technical parameters
- Perform mine scheduling
- Study the effects and impacts of the project to the environment in an effort to minimise them.

General Skills

Upon successful completion of the programme students will:

-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.

- Search, analysis and synthesis of data and information, using the necessary technologies
- Design and management of projects
- Autonomous working
- Team work
- Generation of new research ideas

- Working in a multidisciplinary scientific environment

3. COURSE CONTENTS

Application of computers in the generation and application of exploration databases, geological modeling, resource and reserve modeling, computer aided surveying, design and optimisation of surface and underground mines, mine scheduling. Financial management of mining projects through the application of financial factors in their design and scheduling.

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Face to face
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Extensive use of computers, sophisticated mine planning software, data projection system, internet.
TEACHING METHODS	

Method description	***Semester Workload***
Laboratory computer exercises using Vulcan 3D mine planning software	14 exercises X 4 hours per week = 56 hours
Study of the software user manual	14 exercises X 1 hours per week = 14 hours
Theoretical lectures	14 exercises X 1 hours per week = 14 hours
Study of theory	14 exercises X 1 hours per week = 14 hours
Final theoretical examination study	4 hours
Total	***102***

ASSESSMENT METHODS

Student assessment is carried out in Greek. Students watch through a projection screen and at the same time perform on their computer the steps of each laboratory exercise in the first two-hour part of the course laboratory. In the second two-hour part (which takes place two days after the first one within the same working week), the students are examined in the same exercise without guidance but with open access to the software user manual. Their assessment includes examining the completion of the exercise steps as well as verbal examination on questions related to the exercise. The successful completion of the steps receives at most 5 marks and so does the verbal examination. Thus, the total top marks for each exercise is 10. The average of the exercise marks is used as the final grade for the laboratory part of the course.

Assessment in the theoretical part is based on a final written examination with five questions.

The assessment method for both laboratory and theoretical parts is made known to the students at the beginning of the semester. Additionally, for the theoretical part the students are provided with examples of past exam papers.

5. RESOURCES

- Recommended Book Resources:

- *Kapageridis, I., Mining Information Technology, Theory and Lab Notes, 2013.*
- *Bailey, T.C., and Gatrell, A.C., Interactive Spatial Data Analysis, Longman Scientific and Technical, 1995*
- *Barnes, M.P., Computer-Assisted Mineral Appraisal and Feasibility, American Institute of Mining, Metallurgical and Petroleum Engineers, Inc. 1980*
- *Groshong, R.H., 3D Structural Geology, 2nd Edition, Springer-Verlag, 2006*
- *Mallet, J.L., Geomodeling, Applied Geostatistics Series, Oxford University Press, 2002*
- *Pan, G., and Harris D.P., Information Synthesis for Mineral Exploration, Oxford University Press, 2000*
- *Sinclair, A.J., and Blackwell, G.H., Applied Mineral Inventory Estimation, Cambridge University Press, 2002*
- *Swan, A.R.H., and Sandilands, M., Introduction to Geological Data Analysis, Blackwell Science, 1995*
- *Whittle Programming, Four-X Strategic Planning Software for Open Pit Mines Reference Manual, Whittle Programming Pty Ltd, 1998*

- Recommended Article/Paper Resources:

- Computers & Geosciences
- Mathematical Geosciences

SC: Specialization Courses