

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE506	SEMESTER	5
COURSE TITLE	APPLIED GEOPHYSICS		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		WEEKLY TEACHING HOURS	CREDITS
	Lectures	2	2
	Lab exercises	2	2
	Total	4	4
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	General background		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uowm.gr/courses/MRE144/		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>On successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> ✓ Understand the relationships between the geophysical and other physical properties of earth's crust materials. ✓ Understand the principles, survey design, and survey interpretation of the basic geophysical methods. ✓ Propose the appropriate geophysical methods for the research and its objectives. ✓ Undertake a geophysical survey, evaluate, and interpret geophysical data. ✓ Utilize the results of the geophysical survey along with the results of other geological surveys.

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
Working independently	Showing social, professional and ethical responsibility and 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...

The course aims at:

Search, analysis and synthesis of data and information

Working independently

Production of free, creative, and inductive thinking

(3) SYLLABUS

The modules in this course cover:

- Basic geophysical methods of subsurface investigation: Gravity, Magnetic, Electrical (resistivity method), Electromagnetic. Theoretical analysis of methods, geophysical measurements, processing of measurements and their interpretation by depicting the results in diagrams and design of geophysical - geological model. Applications of basic geophysical methods in the exploration of mineral deposits, structures related to oil and gas-bearing reservoirs, coal, groundwater, mechanical properties of rocks for technical works constructions, etc.
- Laboratory exercises: Geophysical instruments. Application of basic geophysical methods in the field and in the laboratory (data – processing – interpretation).

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of data projector, asynchronous training platform – eclass, laboratory education.	
TEACHING METHODS <i>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</i>	Activity	Semester workload
	Lectures	50
	Lab work	25
	Field work	10
	Lectures study	15
	Course total	100
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice 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.</i>	<p><i>Language of Assessment: Greek</i></p> <p><i>Evaluation methods:</i></p> <p><i>Theory: 60% Final Written Examination (Short Answer Questions, Essay Development Questions).</i></p> <p><i>Laboratory: Laboratory Exercises Written Examination, Problem Solving 40%</i></p> <p>Assessment criteria are provided in the course page on the eclass platform and are available to students from the start of the semester.</p>	

(5) SUGGESTED BIBLIOGRAPHY

<p>- Suggested bibliography:</p> <ul style="list-style-type: none"> • Αραμπέλος Δ. (1991). «Στοιχεία Γεωφυσικών Διασκοπήσεων». Εκδόσεις Ζήτη, Θεσσαλονίκη, 269 σελ. • Παπαζάχος Β. (1996). «Εισαγωγή στην Εφαρμοσμένη Γεωφυσική». Ζήτη Πελαγία & Σια Ι.Κ.Ε., Θεσσαλονίκη, 328 σελ. • Παπαδόπουλος Τ. (2010). «Εισαγωγή στη Γεωφυσική». Εκδόσεις Νέων Τεχνολογιών, 300 σελ. • Τσελέντης Α., Παρασκευόπουλος Π. (2013). «Εφαρμοσμένη Γεωφυσική». LIBERAL BOOKS ΜΟΝΟΠΡΟΣΩΠΗ ΕΠΕ, 624 σελ. • Telford W.M., Geldart L.P., Sheriff R.E., Keys D.A. (1976). "Applied Geophysics". Cambridge, U.K., Cambridge University Press, 860 p. <p>- Related academic journals:</p> <ul style="list-style-type: none"> • Geophysics • Geophysical Journal International • Geophysical Research Letters • Journal of Geophysical Research • Journal of Geophysics and Engineering • Reviews of Geophysics • Surveys in Geophysics • Tectonophysics
