

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE824	SEMESTER	8
COURSE TITLE	Seismic Methods in Hydrocarbons Exploration		
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	3	
Lab exercises	2	2	
Total	4	5	
<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>	Special 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/MRE167/		

(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>Consult Appendix A</p> <ul style="list-style-type: none"> • Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area • Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B • Guidelines for writing Learning Outcomes
<p>On successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> ✓ Understand the principles, survey design, and survey interpretation of seismic geophysical methods. ✓ Undertake a seismic geophysical survey, evaluate and interpret the geophysical data. ✓ Interpret and evaluate seismic data, identifying subsurface geological structures related to hydrocarbon reservoirs.
<p>General Competences</p> <p><i>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?</i></p> <p><i>Search for, analysis and synthesis of data and information, Project planning and management</i></p>

<i>with the use of the necessary technology</i> <i>Adapting to new situations</i> <i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Respect for difference and multiculturalism</i> <i>Respect for the natural environment</i> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>Others...</i>
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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:
- The objectives and the key role of seismic methods, elastic waves propagation in one dimension, space waves and surface waves, ways of elastic waves production in seismic survey, instruments detecting elastic waves, the seismic refraction method, the seismic reflection method, dynamic and static corrections, methods of setting speeds, seismic site evaluation, synthetic seismograms, applications of seismic methods in hydrocarbon exploration, mining research, civil engineering, hydrogeology and environment.
 - Laboratory Exercises: The seismic refraction method, the seismic reflection method (processing and interpretation of data).

(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	60
	Lab work	35
	Lectures study	30
	Course total	125
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 <ul style="list-style-type: none"> • Tectonophysics
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