

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE706	SEMESTER	7
COURSE TITLE	DRILLING TECHNOLOGY		
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	
COURSE TOTAL	3	3	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uowm.gr/courses/MRE157/		

(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>Upon successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • know the types of drilling rigs and when they will be used depending on the type of drilling that will need to be opened. • describe and analyze the parameters related to drilling, such as pressure of cluster pores, cracking pressure, hydraulic loads of drilling pulps, strength of metal elements involved in the casting, etc. • identify the potential risks during drilling and the techniques for dealing with them. • have knowledge of the tools and techniques used in the oil industry to ensure the successful drilling of deep boreholes. • analyze and calculate the key cost elements of the project and their connection to the project schedule.

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?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Project planning and management

(3) SYLLABUS

Types of drillholes (small or large depth – sampling, exploratory, productive). Drilling – drilling in geothermal fields – oil and gas drilling. Types and description of drilling rigs – percussive, rotary. Criteria for the selection of a drilling rig. Rotary drilling and mechanical equipment. Estimation of geomechanical parameters (geopressions, formation cracking). Drilling fluids. Cutting edges – Rock decomposition mechanism. Drilling column (parameters and design criteria). Design of tubing and cementing of boreholes. Inclined and horizontal boreholes (determination of track of inclined boreholes). Completion of tubular boreholes. Analysis and estimation of drilling costs.

(4) TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY</p> <p><i>Face-to-face, Distance learning, etc.</i></p>	Face-to-face	
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p><i>Use of ICT in teaching, laboratory education, communication with students</i></p>	Use of projection system, organization and programming of the course and communication with students through the asynchronous e-learning platform open eclass.	
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>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.</i></p> <p><i>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></p>	<i>Activity</i>	<i>Semester workload</i>
	Lectures	42
	Study of theory and case studies	30
	Educational visits	18
	Course total	90
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Mid-term written exam (40%), final written exam (60%).</p> <p>The evaluation criteria are given on the relevant page of the course on the asynchronous e-learning platform open e-class and are analyzed to the students at the beginning of the semester.</p>	

(5) SUGGESTED BIBLIOGRAPHY

<p>- Suggested bibliography:</p> <p><i>Azar J., Samuel R., 2007, Drilling Engineering, PennWell Books, 486 pages</i></p> <p><i>Devereux S., 2012, Drilling Technology in Nontechnical Language, PennWell Books, 370 pages</i></p> <p><i>Κελεσίδης Β., 2011, Αβαθείς και Ειδικές Γεωτρήσεις, Εκδόσεις Τζιόλα, 464 pages</i></p> <p><i>Παπαδοπούλου Μ., 2000, Όργανα Ρύθμισης και Ελέγχου Γεωτρήσεων, Εκδόσεις Στέλλα Παρίκου, 368 pages</i></p> <p><i>Παπαχαρίσης Ν., Γραμματικόπουλος Ι., Ανδρεάδου-Μάνου Ν., 2015, Γεωτεχνική Μηχανική: Έρευνα-Γεωτρήσεις-Εργαστήριο, Εκδόσεις Κυριακίδη, 584 pages</i></p> <p>- Related academic journals:</p> <p><i>Energies, MDPI</i></p> <p><i>Scientific Drilling, Copernicus Publications</i></p>
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