COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE813	SEMESTER	8
COURSE TITLE	MECHANICAL MINING		

INDEPENDENT TEACHING ACTIVITIES *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*	WEEKLY TEACHING HOURS	CREDITS
LECTURES	2	2.5
LABORATORY EXCERCISES	2	2.5
TOTAL	4	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	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/MRE161/

(2) LEARNING OUTCOMES

Learning outcomes

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.

Consult Appendix A

- *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*

The course aims to enable students to:

1. know about different cutting theories,
2. know the different types of point and roller-cutting equipment,
3. develop performance prediction models,
4. choose and customize the appropriate mechanical mining equipment based on the characteristics of the rocks, and
5. perform laboratory tests for rocks cutting.

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…*
	…….

1. Search, analysis and synthesis of data and information, using the necessary technologies
2. Project planning and management
3. Decision-making
4. Independent work
5. Generating new research ideas

(3) SYLLABUS

Extraction of rocks by mechanical equipment. Drag bits. Disc cutters. Cutting Theories of Merchant, Evans, Roxborough, Nishimatsu and Ozdemir. Specific cutting energy. Abrasive properties of rocks. CERCHAR abrasivity test. Point cutting machines (roadheaders, surface miners). Roller cutters (TBM). Earth moving (dozing), ripping, and scraping. Performance prediction models. Design of cutting heads. Computational exercises. Laboratory tests of rocks cutting.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face lectures, webinars, laboratory exercises on PC using special software.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of a projection system and special software installed in the PCs of a laboratory, organization and scheduling of the course and the communication with students using the asynchronous e-learning platform ‘open eclass’.</td></tr>
<tr><td>TEACHING METHODS
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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>24</td></tr>
<tr><td>Study on lectures</td><td>40</td></tr>
<tr><td>Exercises</td><td>24</td></tr>
<tr><td>Writing assignments</td><td>32</td></tr>
<tr><td>Seminars</td><td>30</td></tr>
<tr><td>Total course</td><td>150</td></tr>
<tr><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
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.</td><td>Final written examination of theory (50% of the total grade of the course), weekly exercises and assignments (50%).
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.</td></tr>
</table>

(5) SUGGESTED BIBLIOGRAPHY

- Suggested bibliography:

Atlas Copco, 2007, Mining Methods in Underground Mining, 144p.

Darling, P. (Ed), 2011, SME Mining Engineering Handbook, Society for Mining, Metallurgy and Exploration, 1846p.

Hartman, H.L., 1987, Introductory Mining Engineering, John Wiley & Sons, 633p.

Hustrulid, W.A., Bullock, R.L. (Eds), 2001, Underground Mining Methods: Engineering Fundamentals and International Case Studies, Society for Mining, Metallurgy, and Exploration, 728p.

Kennedy, B.A. (Ed), 1990, Surface Mining, 2nd Edition, Society for Mining, Metallurgy and Exploration, 1194p.

- Related academic journals:

International Journal of Mining Science and Technology, Elsevier

International Journal of Mining, Reclamation and Environment, Taylor & Francis

Journal of Mining Science, Springer

Mining Journal, Aspermont Media

Mining Technology: Transactions of the Transactions of the Institutions of Mining and Metallurgy, Taylor & Francis