COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE106	SEMESTER	1st
COURSE TITLE	GENERAL MINERALOGY		

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
LABORATORY EXERCISES	2	2
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*	COMPULSORY -SPECIALIZED KNOWLEDGE
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	http://eclass.uowm.gr/courses/MRE117

(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*

After the successful attendance of the course students will be able to:

1. **Understand the concepts of crystallography**
2. **Recognize the crystalline structure of a mineral**
3. **Describe the crystalline structure of a mineral**
4. **Discern the elements of symmetry of a crystal**
5. **Combine the crystalline structure of a mineral with its physicochemical properties and use**

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…*
	…….

- Students comprehend the use and eligibility of the various minerals in industry and the technological development.
- Students learn to use the crystallographic methods.
- Students acquire the ability to study and research the crystallography of minerals in general.
- Students familiarize themselves with the relationship between the crystalline structure of minerals and their properties.

(3) SYLLABUS

- The course of Mineralogy is divided into General and Specialized Mineralogy. The aim of General Mineralogy is the brief and plain study of the basic principles of crystallography, which bind the relationship between the crystalline structure of minerals and their properties.
- Introduction – General concepts
- Chemical bond
- Crystallography – Crystallophysics – Crystallochemistry
- Physical properties of minerals
- Methods of mineral study (macroscopically – geochemical method – pyrochemistry – liquid chemistry – DTA – XFR, XRD – analysis method with microanalyzer – optical method)
- Mineral Diagnostics
- Classification of minerals

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching, laboratory education, communication with students</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>26</td></tr>
<tr><td>Laboratory Practice</td><td>26</td></tr>
<tr><td>Independent & Guided learning</td><td>45</td></tr>
<tr><td>Educational visits</td><td>23</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>120</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>Language of assessment: Greek

Methods of evaluation:
Formative
Multiple choice questionnaires
Short-answer questions
Written assignment
Essay/Report
Oral examination
Practice assignment
Public Presentation</td></tr>
</table>

(5) SUGGESTED BIBLIOGRAPHY

- Προτεινόμενη Βιβλιογραφία:

- Βασικές αρχές και εφαρμογές Ορυκτολογίας, Σεραφείμ Σαββίδη, ΑΛΕΞΑΝΔΡΟΣ ΙΚΕ, 2019, 978-618-84448-5-0 .
- Η. Σ. ΣΑΠΟΥΝΤΖΗΣ, Στοιχεία Ορυκτολογίας, University Studio Press, Θεσσαλονίκη, 1985.
- Π. ΚΟΚΚΟΡΟΣ, Γενική Ορυκτολογία, Έκδοση Η, Εκδόσεις Δ.Ν. Παπαδήμα, Αθήνα, 1982.
- Ch. HURLBUT, Dana's manual of mineralogy, 17. Aufl., John Wiley, New York, 1959.
- Ch. HURLBUT, Jr. Klein, Manual of mineralogy, 19. Aufl.,John Wiley, New York, 1977.
- CW. CORRENS, Einführung in die Mineralogie, 2. Aufl., Springer, Berlin, Heidelberg, New York, 1981.
- P. RAMDOHR, H. Strunz, Klockmann's Lehrbuch der Mineralogie, 16. Aufl., Enke, Stuttgart, 1978.
- E. NICKEL, Grundwissen in Mineralogie, Teil I, II, III, Otto Thun, München, 1971.
- W. KLEBER, Einführung in die Kristallographie, 14. Aufl., VEB Verlag Technik, Berlin, 1979.

-Related academic journals:

- Mineral Wealth
- Mineralium Deposita