COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE305	SEMESTER	3
COURSE TITLE	PETROLOGY		

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
Lab exercises	2	2
Total	**4**	**4**
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*	Required, 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/MRE130/

(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*

On successful completion of the course, students will be able to:

- ✓ Apply the classification and nomenclature of rocks according to international standards.
- ✓ Describe and identify in the petrographic microscope the mineralogical assemblage and the texture of the rocks.
- ✓ Construct and use geochemical diagrams for petrological interpretations.
- ✓ Identify metamorphic reactions and P-T paths using compositional phase diagrams projections and petrogenetic grids.

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:

- Igneous rocks: Magma – crystallization – differentiation. Petrographic and geochemical classification. Textures, plutonic – volcanic rocks. Acid – intermediate – basic – ultrabasic rocks. Phase equilibria – phase diagrams. Geotectonic environments for magma genesis – geochemical discriminative diagrams.
- Sedimentary rocks: Origin. Sedimentation processes. Textures. Classification. Clastic, chemical and biogenic sediments.
- Metamorphic rocks: Factors controlling metamorphism. Types, grade of metamorphism. Classification of metamorphic rocks. Thermal – Regional – Dynamic metamorphism. Migmatites. Compositional phase diagrams, metamorphic reactions and petrogenetic grids. Geothermometry – geobarometry. P-T diagrams.

- Laboratory exercises: Macroscopic – Microscopic study of rocks. Petrographic microscope. Orthoscopic observation – Conoscopic examination. Identification of petrogenetic minerals by studying their optical properties. Petrographic examination of representative types of rocks in thin sections. Determination of minerals – textures and identification of rocks.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of data projector, asynchronous training platform – eclass, laboratory education.
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*	
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.*	*Language of Assessment: Greek* *Evaluation methods:* *Theory: 60% Final Written Examination (Short Answer Questions, Essay Development Questions).* *Laboratory: Laboratory Exercises Written Examination, Problem Solving 40%* Assessment criteria are provided in the course page on the eclass platform and are available to students from the start of the semester.

Activity	*Semester workload*
Lectures	55
Lab work	25
Lectures study	20
Course total	*100*

(5) SUGGESTED BIBLIOGRAPHY

- Suggested bibliography:

- *Δημητριάδης Σ. (1988). «ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΠΕΤΡΟΛΟΓΙΑ ΤΩΝ ΜΕΤΑΜΟΡΦΩΜΕΝΩΝ ΠΕΤΡΩΜΑΤΩΝ». Εκδόσεις ΓΙΑΧΟΥΔΗ. Θεσσαλονίκη. 254 σελ.*
- *Τσιραμπίδης Α. (2008). «Ιζηματογενή Πετρώματα». Εκδόσεις Γιαχούδη. 317 σελ.*
- *Adams A.E., MacKenzie W.S., Guilford C. (1984). "Atlas of sedimentary rocks under the microscope". Longman Scientific & Technical, p. 104.*
- *Blatt H. (1992). "SEDIMENTARY PETROLOGY". 2nd ed., W.H. Freeman and Company, New York, p. 514.*
- *Best M.G. (1982). "Igneous and Metamorphic Petrology". W.H. Freeman and Company, New York, p. 630.*
- *MacKenzie W.S., Donaldson C.H., Guilford C. (1982). "Atlas of igneous rocks and their textures". Longman, p. 148.*
- *Miyashiro A. (1994). "METAMORPHIC PETROLOGY". Ucl Press, London, p. 404.*
- *Nelson S.A. (2018). "Petrology" Tulane University, New Orleans, Louisiana.*
- *Yardley B.W.D., MacKenzie W.S., Guilford C. (1990). "Atlas of metamorphic rocks and their textures". Longman, p. 120.*
- *Yardley B.W.D. (1989). "AN INTRODUCTION TO METAMORPHIC PETROLOGY". Longman, p. 248.*

- Related academic journals:

- *Contributions to Mineralogy and Petrology, Springer Verlag*
- *Journal of Petrology, Oxford University Press*

- *Journal of Metamorphic Geology, Wiley-Blackwell Publishing Ltd*
- *Lithos, Elsevier*
- *Mineralogy and Petrology, Springer-Verlag Wien*