

114. Geology-Mineralogy – Petrography

Instructor: Galanopoulou Stavroula

1. GENERAL

FACULTY	PLANT SCIENCES		
SECTION	FORESTRY AND NATURAL ENVIRONMENT MANAGEMENT		
LEVEL OF STUDY	Undergraduate		
COURSE CODE	114	SEMESTER OF STUDY	1st
COURSE TITLE	GEOLOGY - MINERALOGY - PETROGRAPHY		
INDEPENDENT TEACHING ACTIVITIES		TEACHING WEEKS	CREDITS
Lectures		2	5
Laboratory exercises		2	
Total Course		4	
COURSE TYPE	General Background or Foundation in Basic Sciences		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION AND EXAMINATIONS:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/772/		

2. LEARNING OUTCOMES

Learning Outcomes
<p>The subject of the course is the study of the structure and composition of the earth's interior, geological cycles and geological time, endogenous and exogenous forces as well as the study of the main minerals and rocks that make up the earth's crust. In this context, the main petrogenetic minerals and their physical properties are studied, as well as their formation, properties and classification of magmatic, sedimentary and metamorphic rocks.</p> <p>Course objective:</p> <p>Theoretical part</p> <p>To provide the student with the theoretical background required to understand the geological phenomena that occur both on the surface of the earth and inside it and the processes of formation of minerals and rocks of the earth's crust as well as their relationship with the soil on which forest species grow.</p> <p>Laboratory part</p> <p>To acquire the ability to recognize macroscopically the main minerals and rocks of the earth's crust, to understand their main properties so that he/she can contribute to the design, construction and operation of the forester's works. In this context, the laboratory exercises carry out empirical diagnosis of the main minerals (mineralodiagnostics) and rocks (petrodiagnostics), introduce the use of polarizing microscope in mineralogy and petrodiagnostics, while geological maps are also studied.</p> <p>Upon successful completion of the course, the student is able to study and analyze problems related to the geology, minerals and rocks of an area in order to prepare studies, contribute to the design and management of projects, as well as to make decisions with respect to the natural environment.</p>

General Competencies

- Search, analyze and synthesize data and information, using the necessary technologies
- Making complex decisions
- Autonomous work
- Teamwork
- Working in an interdisciplinary environment
- Respect for the natural environment
- Promotion of free, creative and inductive thinking.

3. COURSE CONTENT

The material per week of the course - in theory and corresponding laboratory exercises - reads as follows:

Theory

- Elements of general geology. Structure and composition of the solid crust and interior of the earth. Geological time. Intrinsic forces.
- Elements of mineralogy - crystallography: Crystal lattice, crystal symmetry, crystal systems, shape and form of minerals.
- Mineralogy. Petrogenetic minerals. Physical properties of minerals. Ways of their formation.
- Systematic classification and description of silicate minerals. Uses of minerals.
- Systematic classification and description of non-silicate minerals. Uses of minerals.
- Description of clay minerals. Properties and uses.
- Petrography. Formation, properties and classification of igneous rocks. Description of rocks.
- Formation, properties and classification of sedimentary rocks. Description of rocks.
- Formation, properties and classification of metamorphic rocks. Factors that cause the metamorphosis and types of metamorphosis. Description of rocks.
- Exogenous forces. Weathering – Corrosion.
- Landslides. Formation of soils and sediments.
- Geology Data of Greece.
- Repetitions, clarifications.

Laboratory

- Familiarity with the laboratory area. Introduction to the study of topographic maps.
- Crystallography exercises.
- Mineradiagnostics: Physical properties of minerals. Methods of mineral exploration and identification.
- Description and identification of minerals (group of silicate minerals).
- Description and identification of minerals (group of non-silicate minerals).
- Description and identification of clay minerals. Repetition (description and identification of all minerals)
- Petrodiagnostics: Classification and identification of igneous rocks.
- Classification and identification of sedimentary rocks.
- Classification and identification of metamorphic rocks.
- Laboratory methods of mineral and rock research. Use of polarizing microscope in mineralogy and petrodiagnostics.
- Outdoor work.
- Study of geological maps.
- Repetitive workshop.

4. TEACHING AND LEARNING METHODS - ASSESSMENT

DELIVERY METHOD	In the classroom, in the laboratory and in the open air.												
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use of Powerpoint slides, communication with students via video conferences, e-mail and eclass. Meetings with students in small groups or per person to solve questions and prepare assignments.												
TEACHING ORGANIZATION	<table> <tr> <th><i>Activity</i></th><th><i>Semester Workload</i></th></tr> <tr> <td>Lectures</td><td>39</td></tr> <tr> <td>Laboratory exercises</td><td>30</td></tr> <tr> <td>Individual work</td><td>8</td></tr> <tr> <td>Study personal</td><td>48</td></tr> <tr> <td>Total Course</td><td>125</td></tr> </table>	<i>Activity</i>	<i>Semester Workload</i>	Lectures	39	Laboratory exercises	30	Individual work	8	Study personal	48	Total Course	125
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STUDENT EVALUATION	<p>I. Written final examination in the theory of the course (development or multiple choice issues) and possibility of individual work, the grade of which is taken into account with that of the written examination.</p> <p>II. Final written examination in the laboratory part of the course (includes identification of minerals and rocks and recording of their properties).</p>												

5. RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:

Stephanidis Panagiotis, 2016. *Petrography, general and technical geology*. Kyriakides Bros Publications S.A.

- Misopolinos Nikos, 1990. *Geology Petrography*. S. Yiachoudis & SIA O.E.
- Papoulis Dimitrios – Lambropoulou Paraskevi, 2016. *Mineralogy: Systematic classification of minerals*. Disigma Publications.
- Theodorikas Stergios, 2010. *Mineralogy – Petrology*. Heron Publications.
- Rontogianni – Tsiampau Theodora, 2021. *Geology*. Tziola Publications.

- Related scientific journals:

- *Hellenic Journal of Geosciences*: <http://www.hellenjgeosci.geol.uoa.gr/index.html>
- *Mineral wealth*: <http://geolib.geo.auth.gr/index.php/mw>
- *European journal of mineralogy*: <https://pubs.geoscienceworld.org/eurimin>
- *American mineralogist*: <https://pubs.geoscienceworld.org/ammin>
- *The Canadian mineralogist*: <https://pubs.geoscienceworld.org/canmin>
- *Lithosphere*: <https://pubs.geoscienceworld.org/lithosphere>
- *Geology*: <https://pubs.geoscienceworld.org/geology>
- *Geosphere*: <https://pubs.geoscienceworld.org/geosphere>
- *Journal of the geological society*: <https://pubs.geoscienceworld.org/jgs>