



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Geochemistry

### Course

Field of study

Environmental Protection Technologies

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

II/3

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Aleksandra Grząbka-Zasadzińska

Responsible for the course/lecturer:

dr hab. inż. Dominik Paukszta

### Prerequisites

Basic knowledge of geochemistry.

Student is able to search for information in scientific literature, databases and other properly chosen sources.

Student is able to laboratory work and operate the scientific equipment.

Understanding the need for further education and improve their professional competences.

### Course objective

Obtaining knowledge in the construction of the Earth's lithosphere, learning about the natural processes occurring in it, and mastering the ability to identify rocks and minerals based on morphological features, optical properties and X-ray studies.

### Course-related learning outcomes

Knowledge

K\_W06The graduate knows the rules of defining and characterizing raw materials, products and



processes used in the chemical industry; the graduate has a knowledge of the directions of development of the chemical industry nationally and worldwide

K\_W14 The graduate has a general knowledge necessary to understand the social, economic, legal and other non-technical conditions of the engineering activity

#### Skills

K\_U01 The graduate acquires information from literature, databases and other sources related to chemical sciences, integrates, interprets and draws conclusions and formulates opinions

K\_U02 The graduate works individually and works effectively in a team

K\_U04 The graduate can prepare a description of a problem concerning the field studied in Polish and in a foreign language

K\_U06 The graduate has the ability to self-study

K\_U13 The graduate determines physical, chemical, mechanical and thermal properties of materials

#### Social competences

K\_K01 The graduate understands the need to develop and improve his/her professional and personal competencies

K\_K02 The graduate is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its environmental impact and the resulting responsibility for his/her decisions

K\_K03 The graduate can cooperate and work in a group, accepting various roles in it

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

1. Rating of written exam
2. Evaluation of laboratory exercises and reports

#### Programme content

Big bang model.

Construction and composition of the Earth. Plate tectonics.

Elemental and mineral structure - elements of solid state chemistry.

X-ray identification analysis of minerals.

Prevalence and geochemical classification of elements. Formation and occurrence of minerals.

Mineral recognition.



Igneous rocks and their composition.

Volcanic rocks. Mineral waters.

Salt minerals.

Rock weathering.

Sedimentary rocks.

Metamorphic processes.

Mineral fillers in technologies.

### Teaching methods

Lectures, laboratory classes

### Bibliography

Basic

1. Migaszewski Z., Gałuszka A., Podstawy geochemii środowiska, Warszawa 2007
2. Kosturkiewicz Z., Metody krystalografii, Wydawnictwo naukowe UAM

Additional

1. Duda R., L. Rejl L., Wielka encyklopedia minerałów, Elipsa 2
2. Kabata-Pendias A., Pendias H., Biogeochemia pierwiastków śladowych, PWN, Warszawa 1999

### Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,0
Classes requiring direct contact with the teacher	60	2,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests/exams, lab report preparation) <sup>1</sup>	30	1,0

<sup>1</sup> delete or add other activities as appropriate