



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Structure and physicochemical properties of minerals [S1TOZ1>SiWFM]

### Course

Field of study

Circular System Technologies

Year/Semester

2/3

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

### Number of hours

Lecture

0

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

### Number of credit points

1,00

### Coordinators

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### Lecturers

### Prerequisites

Basic knowledge of geology. The ability to obtain information from literature, databases, other properly selected sources. Ability to work in a chemical laboratory and operate research equipment. Understanding the need for training and improving one's professional competences and the significance of the effects of engineering activities.

### Course objective

Mastering the ability to identify minerals on the basis of their physicochemical properties.

### Course-related learning outcomes

Knowledge:

k\_w02 - has knowledge of physics and chemistry that allows to understand the phenomena and changes occurring in technological and environmental processes.

k\_w10 - has knowledge of raw materials, products and processes used in closed-loop technologies.

Skills:

k\_u01 - can obtain information from literature, databases and other sources related to closed-loop

technologies, also in a foreign language, integrate them, interpret them, draw conclusions and formulate opinions.

k\_u03 - plans, selects equipment and scientific apparatus, carries out research, analyzes the results and formulates conclusions on this basis.

k\_u08 - is able to plan and organize work individually and in a team.

k\_u21 - is able to plan and carry out simple experiments related to closed-loop technologies, using both experimental and simulation methods, and is able to interpret their results and formulate conclusions.

Social competences:

k\_k02 - shows independence and inventiveness in individual work, and effectively cooperates in a team, playing various roles in it; objectively assesses the effects of his own work and that of team members.

k\_k03 - independently determines and implements the action plan entrusted to him, defining priorities for its implementation, critically assesses the level of advancement in the implementation of the entrusted task.

k\_k07 - shows care and full responsibility for the specialist equipment entrusted to him for testing.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

1. Test before the start of classes.
2. Assessment of laboratory work with a report.

### Programme content

Identification of minerals based on their physicochemical properties.

### Course topics

As part of the course, the student performs practical exercises covering the identification of minerals based on their physicochemical properties (color, gloss, optical properties, hardness, etc.). Student is also familiar with the method of structural analysis of minerals (WAXS method).

### Teaching methods

Laboratories.

### Bibliography

Basic

1. Migaszewski Z., Gałuszka A., Podstawy geochemii środowiska, Warszawa 2007.
2. Duda R., Rejl L., Wielka encyklopedia minerałów, Elipsa 2.

Additional

1. Kabata-Pendias A., Pendias H., Biogeochemia pierwiastków śladowych, PWN, Warszawa 1999.

### Breakdown of average student's workload

|                                                                                                                                         | Hours | ECTS |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Total workload                                                                                                                          | 25    | 1,00 |
| Classes requiring direct contact with the teacher                                                                                       | 16    | 0,50 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 9     | 0,50 |