GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Special-purpose raw materials, PG_00060856		
Field of study	Chemical Technology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Anna Zielińska-Jurek	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	2.0	18.0	50

Subject objectives

As part of the course, the student will acquire knowledge, skills, and competencies related to the functioning of the circular economy as a solution to selected problems in the management of waste from mineral processing. At the same time, the student will gain interdisciplinary theoretical, technological, and engineering knowledge concerning the sustainable management of non-renewable resources (mineral raw materials: energy, metallic, chemical, rock, and organic).

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W07] Has knowledge of raw materials and technologies in the chemicaland polymer industries, also covering issues of corrosion and material protection.	has knowledge enabling the assessment of the suitability and operation of existing engineering and technological solutions in the chemical industry. Characterizes raw materials used in chemical industries. Has knowledge of raw material production technologies in terms of environmental pollution and of modifications in current technologies aimed at solving this problem. Knows methods of waste management and their use as raw materials.	[SW1] Assessment of factual knowledge
[K6_K02] is aware of the responsibility for his/her work and is ready to work in a team and share responsibility for common tasks.	understands the importance of professional responsibility in the field of energy and chemical raw materials and is prepared for effective teamwork, including shared responsibility for the completion of assigned tasks.	[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Raw materials for the petrochemical industry and energy raw materials.

Raw materials for the fertilizer industry.

Raw materials for the plastics processing industry.

Raw materials for the paints and coatings industry.

Raw materials for the pharmaceutical industry.

Raw materials for the plant protection products industry.

Raw materials for the construction industry.

Raw materials for the production of ceramic products.

Wood and wood-based materials.

Key, strategic, and critical raw materials. The states raw materials policy.

Course content – laboratory
Selected methods for the investigation of mineral raw materials: microscopic analysis, X-ray analysis, thermal analysis, dynamic light scattering analysis, and zeta potential analysis, particles size distribution.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>brak</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>lectures - tests</td><td>50.0%</td><td>60.0%</td></tr>
<tr><td>laboratories</td><td>50.0%</td><td>40.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Bolewski A., Manecki A., Mineralogia szczegółowa, Wydawnictwa AGH

2. Gupta A., Yan D.S., Mineral Processing Design and Operation, Elsevier.

3. Polityka surowcowa państwa - dokument rządowy

4. EU Critical Raw Materials Act dokument strategiczny UE</td></tr>
<tr><td>Supplementary literature</td><td>articles in Elsevier, Springer etc.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>List the main raw materials and, using a selected example, discuss the process of their application.

List the raw materials and techniques used in pigment production.

List the main raw materials and, using a selected example, discuss the process of their application.

List and, using a selected example, describe wood processing products.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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