



Subject card

Subject name and code	Special-purpose raw materials, PG_00060856						
Field of study	Chemical Technology						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2027/2028	
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 chemical and 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		

Subject contents	<p>Course content – lecture</p> <p>Raw materials for the petrochemical industry and energy raw materials.</p> <p>Raw materials for the fertilizer industry.</p> <p>Raw materials for the plastics processing industry.</p> <p>Raw materials for the paints and coatings industry.</p> <p>Raw materials for the pharmaceutical industry.</p> <p>Raw materials for the plant protection products industry.</p> <p>Raw materials for the construction industry.</p> <p>Raw materials for the production of ceramic products.</p> <p>Wood and wood-based materials.</p> <p>Key, strategic, and critical raw materials. The states raw materials policy.</p>		
	<p>Course content – laboratory</p> <p>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.</p>		
Prerequisites and co-requisites	brak		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lectures - tests	50.0%	60.0%
	laboratories	50.0%	40.0%
Recommended reading	Basic literature	<p>1. Bolewski A., Manecki A., <i>Mineralogia szczegółowa</i>, Wydawnictwa AGH</p> <p>2. Gupta A., Yan D.S., <i>Mineral Processing Design and Operation</i>, Elsevier.</p> <p>3. Polityka surowcowa państwa - dokument rządowy</p> <p>4. EU Critical Raw Materials Act dokument strategiczny UE</p>	
	Supplementary literature	articles in Elsevier, Springer etc.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	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.		
Practical activities within the subject	Not applicable		

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