



Subject card

Subject name and code	Energetic and Chemical Raw Materials, PG_00060855									
Field of study	Chemical Technology									
Date of commencement of studies	October 2024	Academic year of realisation of subject		2025/2026						
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		dr inż. Anna Grzegórska prof. dr hab. inż. Anna Zielińska-Jurek							
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									
	eNauczanie source addresses: Moodle ID: 1708 Surowce energetyczne i chemiczne https://enauczanie.pg.edu.pl/2025/course/view.php?id=1708									
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	During the course, the student will gain knowledge, skills and competences in the field of raw material acquisition, key, strategic and critical raw materials, the state's raw material policy and the use of waste as raw materials. At the same time, the student will gain theoretical, technological and engineering knowledge of an interdisciplinary nature regarding mineral and energy resources.									
Learning outcomes	Course outcome		Subject outcome		Method of verification					
	[K6_W05] has knowledge of chemical technology based on mineral or energy resources and modern energy sources, understands the concept of sustainable development, knows the principles of green chemistry and environmentally friendly process engineering, has knowledge of occupational safety in the chemical industry		The student possesses knowledge of the impact of mineral processing and raw material production processes on their application in the chemical industry, with particular emphasis on the environmental impact of these processes.		[SW1] Assessment of factual knowledge					
	[K6_U11] individually plans and implements his/her own learning		Uses chemical terminology to the extent necessary to present (in written and oral form) the subject curriculum content.		[SU5] Assessment of ability to present the results of task					
	[K6_K02] understands the non-technical aspects and implications of the activities of a chemical engineer, including the impact on the environment, is aware of professional behaviour, observance of professional ethics and respect for diversity of views and cultures		The student is prepared to critically assess the suitability and modes of operation of existing engineering and technological solutions in the chemical industry, taking into account the properties of the raw materials used.		[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice					

Subject contents	<p>Course content – lecture Classification of raw materials. Basic groups of raw materials: chemical, energy, metal and mineral raw materials. Raw materials of the chemical industry. Sources of raw materials for the chemical industry, methods of enriching fossil raw materials, preparation of raw materials for the technological process. Energy raw materials. Types of fuels, production of artificial fuels, raw materials used in nuclear energy, biogas, fuel combustion. Unconventional energy sources. Mineral raw materials. Limestone, gypsum, kaolins and clays. Processed mineral raw materials. Mineral pigments in chemical technology and their use. Obtaining raw materials from anthropogenic deposits and supporting the development of a circular economy. Metallic raw materials: their specific properties, industrial importance, the most important elements of processing, occurrence in the country and around the world. Synthetic minerals produced in industrial conditions. Resources of the seas and oceans. Key, strategic and critical raw materials. State raw material policy. Application of waste as raw materials Grinding of materials Selected methods of testing mineral raw materials: microscopic analysis, X-ray analysis, thermal analysis, dynamic light scattering and zeta potential analysis. Energy production from unconventional sources.</p> <p>Course content – laboratory Identification of minerals, rocks, and energy resources Raw material crushing Production of mineral pigments Raw material enrichment - flotation Selected mineral resource testing methods: microscopic analysis, X-ray analysis, thermal analysis, dynamic light scattering analysis, and zeta potential analysis. Energy production from unconventional sources.</p>									
Prerequisites and co-requisites										
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="446 676 794 709">Subject passing criteria</th><th data-bbox="794 676 1144 709">Passing threshold</th><th data-bbox="1144 676 1487 709">Percentage of the final grade</th></tr> </thead> <tbody> <tr> <td data-bbox="446 709 794 788">Laboratory: practical exercises, tests, reports on exercises performed</td><td data-bbox="794 709 1144 788">50.0%</td><td data-bbox="1144 709 1487 788">40.0%</td></tr> <tr> <td data-bbox="446 788 794 833">lectures</td><td data-bbox="794 788 1144 833">50.0%</td><td data-bbox="1144 788 1487 833">60.0%</td></tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Laboratory: practical exercises, tests, reports on exercises performed	50.0%	40.0%	lectures	50.0%	60.0%
Subject passing criteria	Passing threshold	Percentage of the final grade								
Laboratory: practical exercises, tests, reports on exercises performed	50.0%	40.0%								
lectures	50.0%	60.0%								
Recommended reading	<table border="1"> <tr> <td data-bbox="446 833 763 1035">Basic literature</td><td data-bbox="763 833 1487 1035"> 1. Praca zbiorowa: Bilans gospodarki surowcami mineralnymi Polski i świata 2001-2005. Wyd. PAN, Instytut Gospodarki Surowcami Mineralnymi i Energią, Kraków, 2007. 2. Magda. R: Międzynarodowe rynki metali i surowców mineralnych. Wyd. AGH, Kraków, 2006. 3. Manecki A. Encyklopedia mineralów. Wyd. AGH, Kraków, 2004. 4. Drzymała J., Podstawy mineralurgii, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2001. </td></tr> <tr> <td data-bbox="446 1035 763 1080">Supplementary literature</td><td data-bbox="763 1035 1487 1080">brak</td></tr> <tr> <td data-bbox="446 1080 763 1102">eResources addresses</td><td data-bbox="763 1080 1487 1102"></td></tr> </table>	Basic literature	1. Praca zbiorowa: Bilans gospodarki surowcami mineralnymi Polski i świata 2001-2005. Wyd. PAN, Instytut Gospodarki Surowcami Mineralnymi i Energią, Kraków, 2007. 2. Magda. R: Międzynarodowe rynki metali i surowców mineralnych. Wyd. AGH, Kraków, 2006. 3. Manecki A. Encyklopedia mineralów. Wyd. AGH, Kraków, 2004. 4. Drzymała J., Podstawy mineralurgii, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2001.	Supplementary literature	brak	eResources addresses				
Basic literature	1. Praca zbiorowa: Bilans gospodarki surowcami mineralnymi Polski i świata 2001-2005. Wyd. PAN, Instytut Gospodarki Surowcami Mineralnymi i Energią, Kraków, 2007. 2. Magda. R: Międzynarodowe rynki metali i surowców mineralnych. Wyd. AGH, Kraków, 2006. 3. Manecki A. Encyklopedia mineralów. Wyd. AGH, Kraków, 2004. 4. Drzymała J., Podstawy mineralurgii, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2001.									
Supplementary literature	brak									
eResources addresses										
Example issues/ example questions/ tasks being completed	<p>Discuss the sources of iron in the Earth's crust List the main lime raw materials used in chemical technology and, using a selected example, discuss the process of their use.</p> <p>Explain the concept of clay raw materials and discuss the methods of using clay raw materials for the production of ceramics.</p> <p>List and, using a selected example, describe the products of wood processing</p> <p>List the raw materials and techniques used in the production of pigments</p>									
Practical activites within the subject	Not applicable									

Document generated electronically. Does not require a seal or signature.