GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Laboratory of inorganic technologies, PG_00060874						
Field of study	Laboratorium technologii nieorganicznych						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
Education level	first-cycle studies		Subject group	Obligatory subject group in the field of study			
Mode of study	Full-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	6		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		dr hab. inż. Marek Lieder				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=1102						
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	Students broaden their knowledge of selected inorganic technologies through their own research in the laboratory and contact with industrial installations.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] is able to apply knowledge of inorganic, organic, physical and analytical chemistry and identify appropriate sources of information to design and synthesize simple chemical compounds, carry out basic physicochemical and analytical measurements	Can plan and conduct simple chemical experiments, interpret measurement results and assess their accuracy. Understands the importance of reliability and accuracy in conducting chemical experiments and documenting results. Can use specialist literature and safety data sheets (MSDS, equipment specifications) when planning experiments.	[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[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	Knows the main mineral and energy resources used in chemical technology and their importance in the raw materials economy. Knows modern trends in chemical technology development based on renewable and alternative energy sources. Understands the principles of green chemistry and can identify their application in the design of environmentally friendly chemical processes. Has basic knowledge of occupational health and safety in the chemical industry and knows the principles of process risk minimisation.	[SW1] Ocena wiedzy faktograficznej
[K6_U12] applies the principles of health and safety at work	Applies health and safety rules when conducting laboratory experiments and operating chemical equipment. Identifies potential hazards in the laboratory environment and is able to counteract them. Selects appropriate personal protective equipment and applies emergency rocedures.	[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[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	Complies with safety and ethical principles when performing laboratory tasks. Is able to analyse the ethical and environmental consequences of the research conducted. Demonstrates openness to cooperation in a team with diverse cultural and ideological backgrounds.	[SK2] Ocena postępów pracy [SK4] Ocena umiejętności komunikacji, w tym poprawności językowej

Subject contents

Course content – laboratory
Inorganic technology in practice: combustion, exhaust gas purification and water management at the

Gdańsk combined heat and power plant field classes

Obtaining superphosphate,

Carbon monoxide capture (IV),

Hydrogen production by alkaline water electrolysis

Inorganic chemistry processes in industrial technology field classes at the Malbork Sugar Factory

Inorganic technology in the paper industry field laboratory classes at Mondi Świecie Sp. z o.o.

Obtaining sodium chlorate (I)

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Inorganic technology, lecture. Passed exam in technology: soda, sulphuric acid, phosphoric acid

and artificial fertilisers, nitrogen compounds (ammonia, nitric acid, urea, ammonium nitrate), fuel combustion,

water treatment, chlorine production.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Knowledge tests</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Lab reports</td><td>0.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">1. Schmidt-Szawłowski, K; Szafran, M.; Bobryk, E.; Sentek, J: Technologia Chemiczna. Przemysł Nieorganiczny, PWN, Warszawa, 2013.
2. Bretsznajder S., Podstawy ogólne technologii chemicznej, WNT, Warszawa, 1973
3. Kępiński J., Technologia chemiczna nieorganiczna, PWN, Warszawa, 1984.
4. Bortel E., Koneczny H , Zarys technologii chemicznej, PWN, Warszawa, 1992.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Praca zbiorowa, Soda i produkty towarzyszące, WNT, Warszawa, 1978.
Dylewski R., Gnot W., Gonet M., Elektrochemia przemysłowa, Wydawnictwo Politechniki Śląskiej, Gliwice, 1999.
Głowiński J. (Red.), Przykłady i zadania do przedmiotu Podstawy Technologii Chemicznej, Wydawnictwo Politechniki Wrocławskiej, Wrocław, 1991.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1. Draw a schematic diagram of the process of obtaining NPK fertiliser.

2. Describe the advantages and disadvantages of obtaining hydrogen by electrolysis.

3. Present the most important chemical and technological challenges in the production of chlorate(I).</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="3">Not applicable</td></tr>
</table>

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