



## Subject card

Subject name and code	Chemical laboratory, PG_00063339						
Field of study	Nanotechnology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department Of Inorganic Chemistry -> Faculty Of Chemistry -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Katarzyna Kazimierczuk				
	Teachers		dr hab. Katarzyna Kazimierczuk  dr inż. Jan Alfuth				
Lesson types and methods of instruction	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						
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		5.0		15.0	50
Subject objectives	The aim of the laboratory classes is to show students, through carefully selected examples, how the properties of elements and the compounds they form manifest in nature and how they are used in science and technology, especially in nanotechnology. An additional goal is to consolidate the chemical knowledge acquired in the previous semester.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W05] has knowledge of inorganic and organic chemistry, physical chemistry and chemical thermodynamics.		The student knows the properties of elements and simple compounds, as well as the reactions involved in the formation of compounds, and understands the impact of structure on properties. They provide examples of the significance of compounds in chemistry, particularly in the chemistry of nanomaterials.		[SW1] Assessment of factual knowledge		
	[K6_U04] can plan and conduct experiments, critically analyze their results, draw conclusions and formulate opinions. Has laboratory experience.		The student is able to perform basic experiments in a chemistry laboratory. They prepare accurate reports on the experiments conducted.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_U02] can analyze and solve simple scientific and technical problems based on possessed knowledge, applying analytical, numerical, simulation and experimental methods.		The student is able to plan and conduct simple laboratory experiments based on the knowledge they possess, using the experimental methods they have learned.		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	Topics of the classes:  <ul style="list-style-type: none"><li>• Redox reactions</li><li>• Complex compounds</li><li>• Qualitative analysis of selected ions</li><li>• Separation of a multicomponent mixture containing acidic, basic, and neutral compounds</li><li>• Crystallization and simple distillation</li><li>• Vacuum distillation</li></ul>						

Prerequisites and co-requisites	The course "General and Inorganic Chemistry" has been successfully completed in semester 1.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	tests and detailed reports	50.0%	100.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"><li>L. Jones, P. Atkins, L. Leroy, <i>General Chemistry</i>, PWN Scientific Publishing, 2020, 2nd edition;</li><li>University Scripts: J. Prejzner, <i>Inorganic Chemistry. Laboratory</i>, PG Publishing, Gdańsk 2004.</li><li>A. Kołodziejczyk, K. Dzierzbicka, <i>Fundamentals of Organic Chemistry, Volume 1 and 2</i>, PG Publishing, Gdańsk, 2020.</li><li>K. Dzierzbicka, G. Cholewiński, J. Rahcoń <i>Apparatus and Unit Processes Used in the Organic Chemistry Laboratory</i>. Gdańsk University of Technology Gdańsk 2018.</li></ul>	
	Supplementary literature	<ul style="list-style-type: none"><li>J. Minczewski, Z. Marczenko, <i>Analytical Chemistry. Vol. 1: Theoretical Foundations and Qualitative Analysis</i>, PWN, 2012.</li></ul>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"><li>Based on the electron balance, select the stoichiometric coefficients in the redox equation: <math display="block">a\text{PbS} + b\text{HNO}_3 + c\text{S} + d\text{Pb}(\text{NO}_3)_2 + e\text{NO} + f\text{H}_2\text{O}</math></li><li>Write a characteristic reaction for detecting the ammonium ion.</li><li>Which acid-base theories are applicable to the description of complex compounds?</li><li>Provide three examples of molecules and ions that act as ligands. What are chelating ligands? Provide examples of such ligands.</li></ul>		
Work placement	Not applicable		

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