



Subject card

Subject name and code	Chemical laboratory, PG_00063339						
Field of study	Nanotechnology						
Date of commencement of studies	October 2026	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	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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Katarzyna Kazmierczuk					
	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						
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_U04] is able to independently or in a team plan and conduct experiments in nanotechnology and related disciplines, including physics, materials engineering, and chemistry, as well as analyze and interpret the obtained results and formulate conclusions.	The student is able to perform basic experiments in a chemistry laboratory. They prepare accurate reports on the experiments conducted.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment				
	[K6_U02] is able to analyze and solve complex and non-routine scientific and technical problems in the field of nanotechnology and related disciplines, including physics, chemistry, and materials engineering, based on acquired knowledge and using appropriate analytical, computational, numerical, simulation, or 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.	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment				
Subject contents	Course content – laboratory Topics of the classes: <ul style="list-style-type: none">• Redox reactions• Complex compounds• Qualitative analysis of selected ions• Separation of a multicomponent mixture containing acidic, basic, and neutral compounds• Crystallization and simple distillation• Vacuum distillation						
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"> L. Jones, P. Atkins, L. Leroy, <i>General Chemistry</i>, PWN Scientific Publishing, 2020, 2nd edition; University Scripts: J. Prejzner, <i>Inorganic Chemistry. Laboratory</i>, PG Publishing, Gdańsk 2004. A. Kołodziejczyk, K. Dzierzbicka, <i>Fundamentals of Organic Chemistry, Volume 1 and 2</i>, PG Publishing, Gdańsk, 2020. K. Dzierzbicka, G. Cholewiński, J. Rahcoń <i>Apparatus and Unit Processes Used in the Organic Chemistry Laboratory</i>. Gdańsk University of Technology Gdańsk 2018. 	
	Supplementary literature	<ul style="list-style-type: none"> J. Minczewski, Z. Marczenko, <i>Analytical Chemistry. Vol. 1: Theoretical Foundations and Qualitative Analysis</i>, PWN, 2012. 	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> Based on the electron balance, select the stoichiometric coefficients in the redox equation: $a\text{PbS} + b\text{HNO}_3 + c\text{S} + d\text{Pb}(\text{NO}_3)_2 + e\text{NO} + f\text{H}_2\text{O}$ Write a characteristic reaction for detecting the ammonium ion. Which acid-base theories are applicable to the description of complex compounds? Provide three examples of molecules and ions that act as ligands. What are chelating ligands? Provide examples of such ligands. 		
Practical activities within the subject	Not applicable		

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