



Subject card

Subject name and code	Inorganic chemistry laboratory, PG_00058997						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study 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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Inorganic Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Jarosław Chojnacki				
	Teachers						
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		10.0		35.0	75
Subject objectives	Acquisition of experience in predicting the course of chemical reactions and in the use of chemical reactions for the purpose of qualitative analysis of substances. Understanding the chemical behaviour of reactants, both alone and in mixtures. Practice proficiency in the writing of chemical reactions and acquire proficiency in predicting reactivity using basic theories of acids and bases and oxidation and reduction.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W02		has knowledge of chemistry enabling the identification of simple substances such as salts or elements		[SW1] Assessment of factual knowledge		
	K6_U05		prepares for theoretical knowlegde tests by oneself		[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_U01		student is able to use the methods of qualitative analysis		[SU1] Assessment of task fulfilment		
	K6_K01		understands the need to improve professional competence in the field of knowledge of chemical reactions		[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	The course program includes 10 exercises in the qualitative analysis of cations, anions and inorganic substances. These exercises are performed individually by students. Each exercise consists in conducting a qualitative analysis of the received sample and writing a test. 1. Introductory classes2. I group of cations: Ag ⁺ , Hg ₂ ²⁺ , Pb ²⁺ 3. II group of cations: Hg ²⁺ , Pb ²⁺ , Bi ³⁺ , Cu ²⁺ , Cd ²⁺ 4. III group of cations: Ni ²⁺ , Co ²⁺ , Fe ³⁺ , Mn ²⁺ , Al ³⁺ , Zn ²⁺ 5. IV i V group of cations: Ca ²⁺ , Ba ²⁺ , Mg ²⁺ , Na ⁺ , K ⁺ , NH ₄ ⁺ 6. I group of anions: Cl ⁻ , Br ⁻ , I ⁻ , [Fe(CN) ₆] ⁴⁻ , [Fe(CN) ₆] ³⁻ 7. II i V group of anions: NO ₂ ⁻ , CH ₃ COO ⁻ , NO ₃ ⁻ , MnO ₄ ⁻ 8. III group of anions: SO ₃ ²⁻ , CO ₃ ²⁻ , C ₂ O ₄ ²⁻ , C ₂ H ₄ O ₆ ²⁻ , BO ₃ ³⁻ 9. IV i VI group of anions: PO ₄ ³⁻ , S ₂ O ₃ ²⁻ , CrO ₄ ²⁻ , SO ₄ ²⁻ 10. Three inorganic substances: acids, bases, salts, oxides, metals.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	reports	55.0%	67.0%
	written tests	55.0%	33.0%
Recommended reading	Basic literature	J. Prejzner: Chemia nieorganiczna. Laboratorium, Wydawnictwo PG, 2004 (polish)	
	Supplementary literature	Material placed in Internet: https://chem.pg.edu.pl/kchn/dydaktyka/skrypt-do-laboratorium	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Complete the reaction equations, specify the colors of the products, mark the deposits with the down arrow: Hg ₂ Cl ₂ + NH ₃ = Hg ₂ (NO ₃) ₂ + Cu = AgCl + NH ₃ = Pb(NO ₃) ₂ + K ₂ CrO ₄ = Ag(NH ₃) ₂ Cl + HNO ₃ =		
Work placement	Not applicable		

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