



Subject card

Subject name and code	Chemistry II, PG_00039780						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2020/2021		
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		dr inż. Damian Rosiak				
			dr hab. inż. Rafał Grubba				
			dr hab. inż. Łukasz Ponikiewski				
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						
	Adresy na platformie eNauczanie: Chemia II laboratorium - Moodle ID: 14828 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=14828						
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		8.0		37.0	75
Subject objectives	Confrontation of knowlegde on reactivity of basic classess of inorganic substances: elements, acids, bases and salts with laboratory practice. Consolidation of material learnt during the first semester of Chemistry I. Basics of classical qualitative analysis of inorganic ions.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W02		Gain knowledge about chemical reactivity of substances in solutions: salts, acids, alkalis and properties of popular metals		[SW1] Assessment of factual knowledge		
	K6_U01		The Student selects a method of analysis which allows unambiguous identification of the sample		[SU4] Assessment of ability to use methods and tools		
	K6_K01		Understands the importance of different behaviour of separate ions and mixtures. Appreciates the need to extend the skills gained		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_U05		Independently investigates and interprets the chemical properties of the sample received and appoints its composition		[SU1] Assessment of task fulfilment		

Subject contents	During the laboratory classes a student examines over one hundred processes of chemical reaction. On the basis of literature he chooses proper reactions and while examining them, he identifies the presence of specific ions in solutions. Next, he examines the basic chemical and physical properties of the material received for further analysis. Later, the student plans to conduct proper experiments. Finally, he analyses their processes and on this basis, he identifies the received sample for analysis. 1. Qualitative analysis of selected cations (Ag^+ , Hg_2^{2+} , Pb^{2+} , Cu^{2+} , Hg^{2+} , Cd^{2+} , Bi^{3+} , Ni^{2+} , Co^{2+} , Fe^{3+} , Zn^{2+} , Mn^{2+} , Al^{3+} , Ca^{2+} , Ba^{2+} , K^+ , NH_4^+ , Na^+ , Mg^{2+}). 2. Qualitative analysis of selected anions. (Cl^- , Br^- , I^- , $[\text{Fe}(\text{CN})_6]^{4-}$, $[\text{Fe}(\text{CN})_6]^{3-}$, NO_2^- , CH_3COO^- , NO_3^- , MnO_4^- , SO_3^{2-} , CO_3^{2-} , $\text{C}_2\text{O}_4^{2-}$, BO_3^{3-} , $\text{C}_4\text{H}_4\text{O}_6^{2-}$, PO_4^{3-} , $\text{S}_2\text{O}_3^{2-}$, CrO_4^{2-} , SO_4^{2-}) 3. Qualitative analysis of selected inorganic compounds: acids, bases, salts and metals		
Prerequisites and co-requisites	Positive note from the exercises part of Chemistry I		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Collection of points for tasks	55.0%	100.0%
Recommended reading	Basic literature	1. J. Prejzner, Chemia Nieorganiczna - Laboratorium - skrypt, Wydawnictwo PG 2004 2. J. Minczewski, Z. Marczenko, Chemia Analityczna Tom 1, PWN Warszawa 1997 3. J. Sawicka i inni, Tablice Chemiczne , Wydawnictwo Podkowa Gdańsk 2002	
	Supplementary literature	Not specified	
	eResources addresses	Chemia II laboratorium - Moodle ID: 14828 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=14828	
Example issues/ example questions/ tasks being completed	Write chemical equations for reactions of nitrates of III group cations with excess of KOH. Write chemical equations for reactions of nitrates of III group cations with excess of $\text{NH}_3 \cdot \text{H}_2\text{O}$. How to detect NO_3^- in the presence of NO_2^- ?		
Work placement	Not applicable		