GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Chemistry II, PG_00039780		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2021/2022
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	prof. dr hab. inż. Jarosław Chojnacki dr inż. Daria Kowalkowska-Zedler	

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 (2022) - Moodle ID: 22272
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22272

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_U05	Independently investigates and interprets the chemical properties of the sample received and appoints its composition	[SU1] Assessment of task fulfilment
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_U01	The Student selects a method of analysis which allows unambigueous identification of the sample	[SU4] Assessment of ability to use methods and tools
K6_W02	Gain knowledge about chemical reactivity of substances in solutions: salts, acids, alkalis and properties of popular metals	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>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 cations. (Cl, Br, I, $[Fe(CN)_6]^4$, $[Fe(CN)_6]^3$, NO_2, CH_3COO, NO_3, MnO_4, SO_3^2, CO_3^2, $C_2O_4^2$, BO_3^3, $C_4H_4O_6^2$, PO_4^3, $S_2O_3^2$, CrO_4^2, SO_4^2)

3. Qualitative analysis of selected inorganic compounds: acids, bases, salts and metals</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Positive note from the exercizes part of Chemistry I</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Collection of points for tasks</td><td>55.0%</td><td>100.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>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</td></tr>
<tr><td>Supplementary literature</td><td>Not specified</td></tr>
<tr><td>eResources addresses</td><td>Chemia II (2022) - Moodle ID: 22272
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22272</td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>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 $NH_3 \cdot H_2O$.

How to detect NO_3^- in the presence of NO_2^- ?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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