GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	General and inorganic chemistry, PG_00061888		
Field of study	Materials Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	1	ECTS credits	4.0
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. Andrzej Okuniewski prof. dr hab. inż. Jarosław Chojnacki	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	0.0	0.0	0.0	45

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	45	5.0	50.0	100

Subject objectives: Understanding of principles of general and inorganic chemistry

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] has knowledge of physics and chemistry, useful for formulating and solving simple problems within the scope of materials science	has knowledge of chemistry useful for formulating and solving simple tasks in the field of materials science	[SW1] Assessment of factual knowledge
[K6_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.	He/she understands the need to improve professional and personal competences, is able to properly determine the priorities for the implementation of tasks specified by him or herself or by others	[SK2] Assessment of progress of work
[K6_U03] Can critically analyze and evaluate the functioning – particularly in the context of materials engineering –existing technical solutions, particularly equipment, objects, systems, processes.	The student is able to make a critical analysis of how technical solutions function from the point of view of chemical sciences and evaluate them, especially in connection with materials engineering.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

1. Structure of matter. The standard model, periodic system of the elements.
2. Electronic structure of the atom.
3. Classification of the elements.
4. Chemical bonds.
5. Classification and structure of chemical compounds.
6. Chemical reaction types: acid-base and red-ox.
7. Concentrations of solutions.
8. Chemical equilibria in water solutions.
9. Writing chemical reactions.
10. Stoichiometric calculations.
11. Rate of chemical reactions.
12. Basics of thermochemistry.
13. Basics of electrochemistry.
14. Corrosion of metals

<table>
<tr><td>Prerequisites and co-requisites</td><td></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>Written exam for lectures</td><td>55.0%</td><td>67.0%</td></tr>
<tr><td>Written tests for the classroom part</td><td>53.0%</td><td>33.0%</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. L. Jones, P. Atkins, Chemia Ogólna. Cząsteczki, materia, reakcje. Wydawnictwo Naukowe PWN Warszawa 2014.
2. A. Bielański, Podstawy Chemii Nieorganicznej, PWN Warszawa 2006
3. Praca zbiorowa, Podstawy Obliczeń Chemicznych, Skrypt w wersji elektronicznej: Skrypt do ćwiczeń
4. Materiały na stronie e-nauczania</td></tr>
<tr><td>Supplementary literature</td><td>1. M. J. Sienko, R. A. Plane, Chemia, Podstawy i Zastosowania, WNT 2002
2. Z. Bądkowska, E. Koloński, M. Wojnowska, Obliczenia z Chemii Nieorganicznej, Wydawnictwo PG 1996 - skrypt.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Balance the reaction: $MnO_4^- + SO_3^{2-} + ... = Mn^{2+} + SO_4^{2-} + H_2O$

Give the electronic configuration of basic state and the number of unpaired electrons for Ga^+, N i F^-.

Write chemical equations and name products of electrolysis of aqueous solution of $CaCl_2$ using platinum electrodes.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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