



Subject card

Subject name and code	General and inorganic chemistry, PG_00061888						
Field of study	Materials Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
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	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_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		
	[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_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		
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						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written tests for the classroom part	53.0%	33.0%
	Written exam for lectures	55.0%	67.0%
Recommended reading	Basic literature	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	
	Supplementary literature	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.	
	eResources addresses	Adresy na platformie eNauczanie: Chemia Ogólna i Nieorganiczna - Moodle ID: 32831 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32831	
Example issues/ example questions/ tasks being completed	Balance the reaction: $\text{MnO}_4^- + \text{SO}_3^{2-} + \dots = \text{Mn}^{2+} + \text{SO}_4^{2-} + \text{H}_2\text{O}$ 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.		
Work placement	Not applicable		