

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	INORGANIC CHEMISTRY, PG_00053213								
Field of study	Chemistry								
Date of commencement of studies	October 2022		Academic year of realisation of subject		2023/2024				
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	2		Language of instruction			Polish			
Semester of study	3		ECTS credits			5.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Department Of Inorganic Chemistry -> Faculty Of Chemistry -> Wydziały Politechniki Gdańskiej								
Name and surname	Subject supervisor		prof. dr hab. inż. Anna Dołęga						
of lecturer (lecturers)	Teachers		dr inż. Aleksandra Ziółkowska						
			dr inż. Anna Ordvszewska						
			dr nad. Inz. Ratał Grubba						
			dr inż. Mateusz Daśko						
			dr inż. Karol Biernacki						
			prof dr.hab inż Anna Dołega						
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Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	30.0	0.0	45.0	0.0		0.0	75	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity Participation ir classes include plan		n didactic Participation in ed in study consultation hours		Self-study		SUM		
	Number of study hours	75		10.0		40.0		125	
Subject objectives	Basic knowledge of inorganic chemistry, properties of elements and their compounds - part 2, metals.								

Learning outcomes	Course outcome	Subject outcome	Method of verification			
	K6_W02	The student understands the laws, concepts and chemical phenomena, uses terminology and chemical symbolism related to: construction of inorganic compounds, types of chemical reactions, ionic dissociation and neutralization and precipitation reactions; knows the physicochemical properties of the elements and their chemical compounds and their applications; understands chemical phenomena and processes, including: energy effects of changes, factors affecting the course of reactions chemical.	[SW1] Assessment of factual knowledge			
	K6_W03	The student can interpret the properties of elements and their compounds at the molecular level. The student understands the relationship between the properties of chemical elements and their applications and occurrence in living organisms.	[SW1] Assessment of factual knowledge			
Subject contents	LECTURE: Metals and their melts. Aluminum and heavier elements of boron group. The chemistry of s block elements. Lantanides and lantanide contraction. Actinides. The chemistry of d-block elements. Elements ScZn versus YCd and LaHg. Mineral resources. Chemical basis of selected inorganic industrial processes - pure metals. LABORATORY: Every student has to do a two-semester course of classic qualitative analysis. During the running semester it consists of several practical exercises covering the qualitative analysis of selected anions, salts and simple inorganic substances.					
Prerequisites and co-requisites						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade			
	Written exam	60.0%	67.0%			
	Laboratory - 5 short tests and 5 detailed reports	45.0%	33.0%			
Recommended reading	<ul> <li>Bielański Chemia nieorganiczna, PWN recent editions; P.A. Cox Krótkie wykłady, chemia nieorganiczna, PWN 2003; F.A. Cotton, G. Wilkinson, P.L. Gaus Chemia nieorganiczna, podstawy, PWN 1995. University scripts: J. Prejzner: Inorganic Chemistry. Laboratory exercises. Issued by Gdansk University of Technology, Gdansk 2004.</li> </ul>					
	Supplementary literature N.N. Greenwood, A. Earnshaw Chemistry of the elements Perga 2nd Ed. (2005); C.E. Housecroft, A.G. Sharpe Inorganic chemist Pearson, Prentice Hall; 1st (2001), 2nd (2005) or 3rd (2008) edit A.F. Wells Strukturalna chemia nieorganiczna WNT, 1993. M. Ła Basics Inorganic Qualitative Analysis, Issued by UAM, Poznań					
	eResources addresses	Adresy na platformie eNauczanie:				

Example issues/ example questions/ tasks being completed	Describe the industrial method of soda ash synthesis.
	Write the reactions of lithium, sodium and potassium with the oxygen. What kind of ions are present in combustion products? Are these ions diamagnetic or paramagnetic? Answer justify using electron configurations and / or diagrams of molecular orbitals of the corresponding ions.
	For sodium, specify: a) electron configuration and the number of unpaired electrons in the ground state of Na atom; b) hydride type; answer the question whether the bonds in sodium hydride are ionic or covalent; write the reaction equation of sodium hydride with water; c) what is the main reaction product of the reaction of sodium with excess oxygen; write down the equation for this reaction and the reaction equation for the resulting sodium compound with carbon dioxide; write what the last reaction is used for; d) what is the chemical nature (alkaline, amphoteric, acidic, neutral) of sodium oxide; record at least two equations of reaction justifying the selected chemical character of this oxide.
	Among the given hydroxides, indicate amphoteric and write the reaction equations showing their amphotericity: aluminum hydroxide, sodium hydroxide, lead hydroxide (II), barium hydroxide.
	Provide the chemical composition of the following substances: a) quick lime; b) slaked lime; c) gypsum water; d) dolomite.
Work placement	Not applicable

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