GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	INORGANIC CHEMISTRY, PG_00064385		
Field of study	CHEMIA NIEORGANICZNA		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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 of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Anna Dołęga	
	Teachers	prof. dr hab. inż. Anna Dołęga dr hab. inż. Łukasz Ponikiewski dr inż. Anna Ordyszewska-Lach	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	30.0	0.0	0.0	60

E-learning hours included: 0.0

eNauczanie source addresses:
Moodle ID: 1744 2025/26 CHEMIA NIEORGANICZNA
https://enauczanie.pg.edu.pl/2025/course/view.php?id=1744

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	60	10.0	55.0	125

Subject objectives

The aim of the course is to familiarize students with the inorganic chemistry of the s-, p-, d- and f-block elements, including their structure, chemical and physical properties, periodic trends, as well as the practical importance of metals and their compounds in technology and everyday life.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] classifies acquired information, assessing its usefulness in solving the posed problems concerning the synthesis and analysis of selected groups of compounds, determining their physical and chemical properties, making measurements and determining the parameters of chemical reactions and processes	The student classifies acquired information by assessing its relevance to solving problems related to the synthesis and analysis of selected groups of inorganic compounds, determining their physical and chemical properties, performing measurements, and defining the parameters of chemical reactions and processes.	[SW1] Ocena wiedzy faktograficznej
[K6_U09] is able to recognise hazards, counteract them and work with chemical reagents and basic technical apparatus in accordance with health and safety principles and the concept of sustainability	The student is able to identify potential hazards in inorganic chemistry laboratory work and counteract them, handling chemical reagents and basic equipment in accordance with health and safety regulations and the principles of sustainable development.	[SU1] Ocena realizacji zadania
[K6_U05] designs and performs experiments to confirm a hypothesis, recognises the wider, often non-technical context of the phenomena analysed	The student is able to design and conduct experiments to verify a given hypothesis and to recognize the broader, often non-technical context of the analyzed phenomena.	[SU1] Ocena realizacji zadania
[K6_W03] demonstrates knowledge in the area of theoretical chemistry and related engineering disciplines, necessary to predict structures, design and conduct basic process operations using molecular mechanics tools	The student demonstrates knowledge in the field of theoretical chemistry and related engineering disciplines, necessary for predicting structures, designing and conducting basic operations of technological processes using molecular mechanics tools.	[SW1] Ocena wiedzy faktograficznej

Subject contents

- Boron group (boron) Structure of solids, metals and their alloys
- Boron group (aluminium, gallium, indium, thallium)
- Chemistry of s-block elements alkali metals
- Chemistry of s-block elements alkaline earth metals
- Chemistry of d-block elements elements ScZn versus YCd and LaHg, lanthanide contraction, scandium group
- Titanium group
- Vanadium group
- Chromium group
- Manganese group
- Iron triad
- Light and heavy platinum group metals
- Copper group
- Zinc group
- Lanthanides and actinides

As part of the laboratory exercises, students continue exploring the physical and chemical properties of inorganic compounds and simple methods of their separation and identification, which they began in the second semester. In addition, students gain basic experimental skills in inorganic chemistry. The list of laboratories:

1. Introductory session, safety rules in the laboratory, discussion of the course program;
2. Analysis of three inorganic substances: metal, non-metal, oxide, hydroxide, inorganic acid, salt (cation and anion among those discussed in the second semester);
3. Analysis of a salt mixture cation and anion among those discussed in the second semester;
4. Determination of the content of selected ions in food products and fertilizers;
5. Inorganic preparation techniques.

Prerequisites and co-requisites

None

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory-tests and reports	46.67%	40.0%
Lesture-examination	60.0%	60.0%

Recommended reading	Basic literature	Mark Weller, Tina Overton, Jonathan Rourke, Fraser Armstrong: Inorganic chemistry Tom 2, Wydawnictwo Naukowe PWN
	Supplementary literature	Adam Bielański, Basics of Inorganic Chemistry, PWN
	eResources addresses	
Example issues/ example questions/ tasks being completed	The reaction occurring at the cathode of operating lithium-ion batteries is: A) reduction of cobalt(IV) B) oxidation of cobalt(III) C) reduction of Li(I) D) oxidation of lithium An insoluble sodium mineral in water is: A) natrolite B) sylvite C) halite D) sodium nitrite The orange-yellow light of some discharge lamps results from using vapor of: A) strontium B) sodium C) lithium D) rubidium The products of the reaction of manganese dioxide with sulfuric acid are: A) manganese(II) sulfate(VI), hydrogen, and water B) manganese(II) oxide, sulfur dioxide, and water C) manganese(II) sulfate(VI), sulfur dioxide, and water D) manganese(II) sulfate(VI), oxygen, and water E) manganese(II) sulfate(IV), oxygen, and water If 0.1065 g of a brass sample dissolved in nitric acid causes the precipitation of 0.1270 g of iodine from a KI solution, the copper content in the brass is: A) 60% B) 70% C) 75% D) 80% In the Mond process for nickel purification, the following volatile nickel compound is used: A) NiO B) NiCl C) Ni(CO) D) NiCO Platinum(II) chloride can be obtained in the following reaction: A) Pt + 2HCl PtCl + H B) Pt + Cl PtCl C) PtCl PtCl + Cl D) Pt + CCl PtCl + C + Cl	
Practical activites within the subject	Not applicable	

Document generated electronically. Does not require a seal or signature.