GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Inorganic Chemistry, PG_00060850		
Field of study	Chemical Technology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
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	6.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Inorganic Chemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Rafał Grubba	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	60.0	0.0	0.0	75

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	75	5.0	70.0	150

Subject objectives

The aim of the course is to introduce students to the properties, applications, and technological importance of selected elements and their compounds. Students will learn about selected processes in inorganic technology. The course develops the ability to practically apply chemical knowledge in the synthesis, and identification of inorganic compounds.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] Possesses the chemical knowledge necessary to synthesize, analyze and evaluate the properties of compounds and processes used in chemical technology.	Possesses knowledge of inorganic chemistry, including the preparation, physical and chemical properties, and qualitative analysis of inorganic compounds, with particular emphasis on compounds and reactions used in inorganic technology.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K6_U03] Uses chemical knowledge to design compounds, perform physicochemical and analytical measurements, and obtain appropriate sources of information.	Is able to design the synthesis of simple inorganic compounds based on his/her knowledge of inorganic chemistry and the scientific literature.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Lecture:- Properties, application and technological significance of selected elements of the main groups of the periodic table:group 14, group 15, group 16, group 17, group 18- Metals: chemical and physical properties of metals, metallic bond, galvanic series, characteristics of metals d and f blocks, basics of chemistry of complex compounds- Selected inorganic technology processes.
Course content – laboratory

Each student performs 12 exercises covering qualitative analysis (selected cations, anions, and salts composed of these ions, inorganic substances), equilibria in electrolyte solutions, and the preparation of inorganic compounds. As part of the exercises, students learn about the physical and chemical properties of inorganic compounds, as well as methods of their synthesis, separation, and identification. They also acquire the fundamental experimental skills of inorganic chemistry.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>It is required to pass the classes and lectures in Inorganic Chemistry, semester II.</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</td><td>60.0%</td><td>60.0%</td></tr>
<tr><td>Written tests and reports on laboratory exercises - ten times during semester</td><td>60.0%</td><td>40.0%</td></tr>
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<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>• L. Jones, P. Atkins "Chemia ogólna"; PWN, 2004, or more recent issues (Polish translation from English "General Chemistry" original)
• A. Bielański Podstawy chemii nieorganicznej (PWN) recent issues;
• P.A. Cox Krótkie wykłady, chemia nieorganiczna, PWN, 2003; (Polish translation from English "Instant Notes in Inorganic Chemistry" original)</td></tr>
<tr><td>Supplementary literature</td><td>• Materials for the course are available on the enuczanie platform</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Ammonia is a technically important compound. Give his Lewis formula. Discuss the conditions of its industrial production in detail. Justify the conditions of the reaction using the rule of contrariness.
2. Sulfuric acid (VI) is an important product of the chemical industry. Describe his method of industrial production. Give Lewis formulas and molecular shapes for HSO3, SO2, SO3.
3. What is the reaction of the aqueous solution of: a) beryllium nitrate (V), b) rubidium orthoarsenate (V), c) thallium nitrate (I)? Give the reaction responsible for the pH of these solutions or state that salt does not react with water.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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