University of Gdańsk

Subject card

Subject name and code	Inorganic chemistry, PG_00080829		
Field of study	Chemical Business		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	Bachelor's 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 Polish
Semester of study	2	ECTS credits	2.0
Learning profile	academic	Assessment form	exam
Conducting unit	Laboratory of Physicochemistry of Coordination Complexes -> Department of General and Inorganic Chemistry -> Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Dariusz Wyrzykowski	
	Teachers	dr hab. Dariusz Wyrzykowski	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30	5.0	15.0	50

Subject objectives	- to consolidate basic theoretical knowledge of inorganic chemistry - to introduce important problems of modern inorganic chemistry - introduction to the most important contemporary issues in inorganic chemistry which constitute progress in this field - to develop the ability to conduct experiments independently, to interpret the results obtained and to solve problems while conducting chemical experiments

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_W02] Enumerates basic laws and theories in chemistry, physics and mathematics necessary to formulate and solve simple engineering tasks.	Enumerates basic laws and theories in chemistry, physics and mathematics necessary to formulate and solve simple engineering tasks,	[SW3] text preparation/written work
[BCHINŻ_W10] Applies safety and hygiene principles when working on a test and measurement stand or in the field.	Knows and understands the principles of safety and hygiene when working at a research and measurement station or in the field.	[SW4] test/exam - oral or written
[BCHINŻ_U09] Using the acquired knowledge, skills and various sources of scientific information independently prepares written papers and oral presentations.	Using the acquired knowledge, skills and various sources of scientific information, he independently prepares written works and oral presentations.	[SU4] test/exam - oral or written
[BCHINŻ_U03] Plans, selects the appropriate research and measuring equipment and performs simple chemical experiments; analyses the results and draws conclusions based on them.	Plans, selects appropriate research and measurement equipment and apparatus, and performs chemical experiments; analyzes the results and formulates conclusions based on them.	[SU4] test/exam - oral or written
[BCHINŻ_U02] Uses basic methods, techniques and tools in formulating and solving engineering tasks in the field of chemistry.	Applies methods, techniques and tools in formulating and solving engineering tasks in the field of chemistry.	[SU4] test/exam - oral or written
[BCHINŻ_U08] Uses the chemical nomenclature and engineering terminology properly.	Appropriately uses chemical nomenclature and engineering terminology.	[SU4] test/exam - oral or written
[BCHINŻ_K04] Demonstrates responsibility for the safety of her/ his own and others' work.	Demonstrates responsibility for the safety of one's own and others' work.	[SK4] test/exam - oral or written

Subject contents

Topics of the lecture: periodicity and the chemistry of the elements, physicochemical properties of inorganic and coordination compounds. The following items are included: periodicity, chemical bonding, coordination compounds, types of chemical reactions, properties of chemical elements and their compounds. The groups of elements are presented in the following order: group 1, group 2, group 13, group14, group 15, group 16, group 17, group 18, and d-elements (groups 3-12; first transition row, second transition row, and third transition row).

Topics of auditory classes: basic types of inorganic compounds, valence bond theory, hybridization and molecular geometry; molecular orbital theory; solid state bonds: ionic, covalent, metallic; metals, semiconductors and insulator; coordination compounds.

Topics of lab classes: investigation of physicochemical properties of the elements, inorganic and coordination compounds based on chemical experiments.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	51.0%	100.0%

Recommended reading

Basic literature	A. Bielański Podstawy chemii nieorganicznej, PWN 2002 L. Jones, P. Atkins Chemia ogólna, PWN 2004 B. Literatura uzupełniająca L. Pajdowski Chemia ogólna, PWN 1999
Supplementary literature	J. D. Lee Zwięzła chemia nieorganiczna, PWN 1997
eResources addresses	

Example issues/ example questions/ tasks being completed

Based on the theory of hard and soft acids and bases, explain the difference in solubility of silver halides.

Explain the differences in magnetic properties (diamagnetic, paramagnetic) of sodium peroxide and potassium superoxide (Hint: based on an analysis of the electron distribution on the molecular orbitals of the peroxide ion and the superoxide ion, indicate which of the individuals has unpaired electrons/electrons. On this basis, indicate which of the compounds exhibits paramagnetic and which exhibits diamagnetic properties).

Work placement

Not applicable

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