



Subject card

Subject name and code	, PG_00048762						
Field of study	Green Technologies						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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		English		
Semester of study	2		ECTS credits		7.0		
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		dr hab. inż. Agnieszka Pladzyk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	45.0	0.0	0.0	90
	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	90		10.0		75.0	175
Subject objectives	Through lectures, exercises and laboratories, cause the student to understand and use basic concepts of inorganic chemistry.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U01] is able to obtain information from literature, databases and other sources, is able to integrate the information obtained, to make their interpretation, as well as draw conclusions and formulate and justify opinions, take part in the discussion	The student is able to select appropriate data from the literature to carry out basic chemical calculations, determine the course of reactions occurring in aqueous solutions, as well as analyze the obtained results, calculations and verify their correctness.	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
	[K6_K01] understands the need for learning throughout life, can inspire and organize the learning process of others. Is aware of his/her own limitations and knows when to ask the experts, can properly identify priorities for implementation, critically evaluate his knowledge	The student understands the need and necessity of continuous improvement of his knowledge, is able to plan the sequence of activities that allow to complete the task at hand	[SK4] Assessment of communication skills, including language correctness [SK3] Assessment of ability to organize work [SK2] Assessment of progress of work
	[K6_U05] can formulate and solve engineering tasks analytical methods, simulation as well as experimental, able to apply knowledge of basic physics and mathematics to analyze the results of experiments, is able to analyze and assess existing technical solutions	Student is able to use properly selected analytical, simulation and experimental methods and equipment to measure the basic quantities that characterize chemical substances and processes in aqueous solutions.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K6_W02] has a basic knowledge of chemistry including general chemistry, inorganic, organic, physical, analytical, including the knowledge necessary to describe and understand the phenomena and chemical processes occurring in the environment; measurement and the determination of the parameters of these processes.	The student has knowledge of chemistry including general and inorganic chemistry, with the necessary knowledge to describe and understand chemical phenomena and processes occurring in aqueous solutions, determine the parameters of these processes. The student describes the properties of basic chemical compounds, their occurrence and functions in living organisms and the environment.	[SW1] Assessment of factual knowledge
Subject contents	<p>LECTURE:</p> <ul style="list-style-type: none"> Types of inorganic reactions: redox reactions, proton transfer (acid-base equilibria), ligand transfer (precipitation reactions, complexation reactions). Equilibria in electrolyte solutions (acids, bases, buffers, hydrolysis of salts). Review of the basic classes of compounds of the s, p and d binary elements of the periodic table Essential trace and ultra trace elements, bio-molecules, metalloproteins-selected examples. <p>TUTORIALS - practical calculation activities:</p> <ul style="list-style-type: none"> Equilibria in aqueous electrolyte solutions. Ion concentrations and pH of solutions of weak and strong acids and bases. The effect of a common ion. Buffer solutions. Hydrolysis of salts. Solubility and solubility product. Equilibria in solutions of complex compounds. <p>LABORATORY - practical classes. Classical qualitative analysis course - 9 exercises including:</p> <ul style="list-style-type: none"> analysis of aqueous solutions of selected cations and anions. analysis of inorganic substances: metal, non-metal, oxide, acid, base, salt, study of the properties of buffer solutions and aqueous solutions of inorganic salts. 		
Prerequisites and co-requisites	no entry requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory - test and reports	45.0%	25.0%
	lecture - exam	60.0%	50.0%
	tutorials - two test	60.0%	25.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> A. Bielański Chemia nieorganiczna, PWN wydania z ostatnich lat; P.A. Cox Krótkie wykłady, chemia nieorganiczna, PWN 2003; L. Jones, P. Atkins, L. Leroy, Chemia ogólna, Wydawnictwo naukowe PWN 2020, wydanie II; Skrypty uczelniane: J. Prejzner: Chemia nieorganiczna. Laboratorium Wydawnictwo PG, Gdańsk 2004. Chemia ogólna i nieorganiczna ćwiczenia rachunkowe Praca zbiorowa pod redakcją A. Okuniewskiego, Wydawnictwo PG, Gdańsk. (2019) 	

	Supplementary literature	<ul style="list-style-type: none"> N.N. Greenwood, A. Earnshaw Chemistry of the elements Pergamon, wyd. II (2005); C.E. Housecroft, A.G. Sharpe Inorganic chemistry, Pearson, Prentice Hall; wyd I (2001), II (2005) lub III (2008);
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> What are buffers? Give an example of an acidic buffer? Write the hydrolysis reaction of the salt CH_3COONa. What will be the pH of an aqueous solution of this salt? Describe the process of producing sulfuric(VI) and nitric(V) acid. Describe the properties of noble gases Describe the chemical properties of the elements of the 4th group of the periodic table of elements. Write the reactions of copper dissolution in concentrated and dilute nitric acid Write the dissociation equations of orthophosphoric(V) and orthoboric(III) acid. In each equation, indicate the acid and base according to Brønsted or Lewis theory. Describe the industrial method for obtaining nitric acid. Describe the industrial method for obtaining ammonia. Describe the industrial method for obtaining acid 	
Work placement	Not applicable	

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