

Subject card

Subject name and code	Principles of Chemistry with Elements of Inorganic Chemistry, PG_00207507						
Field of study	Nuclear safety and radiological protection						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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		
Semester of study	1		ECTS credits		8.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Department of Bioinorganic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Agnieszka Chylewska, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	30.0	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		0.0		110.0	200
Subject objectives	Learning the basic types of inorganic compounds and methods of chemical calculations. Developing the ability to independently experiment and solve analytical problems.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BJORL3_W01] Has an advanced knowledge and understanding of the main concepts and principles of nuclear physics and chemistry, understands their historical development and significance not only for nuclear safety and radiation protection, but also in the context of the fundamental dilemmas facing modern civilization.	Classifies, names and characterizes the basic types of chemical compounds, and defines and describes the basic methods of chemical analysis concerning nuclear chemistry.	[SW4] test/exam - oral or written [SW3] text preparation/written work
	[BJORL3_W03] Has advanced knowledge and understanding of the principles of planning and conducting simple physical and chemical experiments and analyzing obtained results; has knowledge and understanding of the fundamentals of measurement uncertainty as applied to experiments, the base SI units and the most important derived units, as well as other systems of units.	Can carry out simple chemical experiments in the field of basic chemistry. Can analyze and draw conclusions based on the results of laboratory work. Knows and uses basic units of measurement.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report [SW3] text preparation/written work
	[BJORL3_W02] Has an advanced understanding of the role of physical and chemical experiments, mathematical theoretical models approximating reality, and computer simulations in scientific research methodology; is aware of technological, apparatus, and methodological limitations in scientific research.	Understands the role of a chemical experiment as a model approximating reality.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report [SW3] text preparation/written work
	[BJORL3_W05] Has advanced knowledge of the elementary components of matter and the types of fundamental interactions between them, the manifestations of these interactions in phenomena occurring at scales ranging from subatomic to subatomic, knows the time and energy scales associated with these phenomena.	Classifies, names and characterizes the basic types of chemical compounds. Lists and describes the properties of chemical substances. Defines the basics of ecology in the field of nuclear safety and radiological protection.	[SW4] test/exam - oral or written [SW3] text preparation/written work
	[BJORL3_U01] Can formulate the laws of physics and chemistry using mathematical formalism.	Uses basic equations describing chemical laws to determine physicochemical parameters.	[SU3] text preparation/written work [SU4] test/exam - oral or written
	[BJORL3_U03] Is able to use the formalism of physics and chemistry to describe phenomena in the microworld.	Correctly presents and explains chemical phenomena and processes with radiochemistry and nuclear safety.	[SU3] text preparation/written work [SU4] test/exam - oral or written
Subject contents	Lecture: Laws and concepts in chemistry. Atomistic theory of the structure of matter. Periodicity of physicochemical properties and the position of the element in the periodic table. Chemical bonds and interactions. Chemical equations and elements of stoichiometry. Equilibrium in solutions. Theories of acids and bases. Elements of nuclear chemistry. Exercises: basic chemical laws and calculations with unit conversion. Types of compounds and chemical reactions. Types of solutions and equilibria. Laboratory: occupational health and safety rules. Topics of exercises consistent with the lecture program.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	51.0%	30.0%
	Tests	51.0%	40.0%
	Tests and reports	51.0%	30.0%

Recommended reading	Basic literature	• A.1. used in class • Collective work Obliczenia z chemii ogólnej - UG script • Collective work Ćwiczenia laboratoryjne z chemii ogólnej. I. Część teoretyczna - UG script • Collective work Ćwiczenia laboratoryjne z chemii ogólnej. II. Część doświadczalna - sUG script • A.2. studied independently by the student • A. Bielański Podstawy chemii nieorganicznej • J. D. Lee Związła chemia nieorganiczna • L. Jones, P. Atkins Chemia ogólna
	Supplementary literature	• L. Pajdowski Chemia ogólna • M. J. Sienko, R. A. Plane Chemia. Podstawy i zastosowania
	eResources addresses	
Example issues/ example questions/ tasks being completed	not applicable	
Work placement	Not applicable	

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