University of Gdańsk

Subject card

Subject name and code	General chemistry, PG_00053436		
Field of study	Environmental Protection		
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
Semester of study	1	ECTS credits	4.0
Learning profile	academic	Assessment form	credit
Conducting unit	Department of General and Inorganic Chemistry -> Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Joanna Makowska	
	Teachers	mgr Aleksandra Ciesielska dr Mateusz Kowalik	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	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	65.0	100

Subject objectives	- familiarizing students with the basic types of inorganic compounds and methods of balancing chemical reaction equations, - introducing students to the basics of chemical calculations.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚL3_K08] Is responsible for and takes care of the specialist equipment entrusted to her/him for research and laboratory or field work.	student performs basic chemical calculations, taking into account basic chemical and gas laws, stoichiometry and concentrations of solutions and is able to apply them to conduct experiments and prepare laboratory experiments	[SK8] observation of student's independent or team work
[OŚL3_U09] Prepares in Polish/ English a short description of research, observation or problem task carried out during classes using appropriate scientific terminology.	Students: present plainly – in both speech and writing – correct chemical argumentation, interpret and analyze information connected with basic chemical and gas laws, stoichiometry and concentrations of solutions	[SU3] text preparation/written work
[OŚL3_U04] Uses specialist language in the discussion and properly uses the nomenclature in the field of environmental protection and individual disciplines related to it.	- student knows basic computational techniques in chemistry, - student can perform basic chemical calculations, taking into account basic chemical and gas laws, stoichiometry and concentrations of solutions, - student can read information from the periodic table of elements, - based on the position of an element in the periodic table, student determines its structure and characterizes its properties, - student can balance the equations of chemical reactions,	[SU3] text preparation/written work
[OŚL3_W01] Discusses the basic concepts of mathematics, physics, chemistry and biology. Describes physical, chemical and biological phenomena occurring in nature as well as geological, geomorphological and climatic conditions of the functioning of nature.	- student knows basic computational techniques in chemistry, - student can perform basic chemical calculations, taking into account basic chemical and gas laws, stoichiometry and concentrations of solutions, - student can read information from the periodic table of elements, - based on the position of an element in the periodic table, student determines its structure and characterizes its properties, - student can balance the equations of chemical reactions,	[SW2] presentation/project/paper/ report
[OŚL3_K05] Identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development.	Student understands the need independent information search in scientific literature; can formulate appropriate questions	[SK1] oral statement/conversation/ discussion

Subject contents

Balancing chemical equations (methods of obtaining oxides, acids, bases and salts as well as their nomenclature and chemical properties; methods of describing chemical reactions; methods of selecting stoichiometric coefficients in redox equations with particular emphasis on the method of half-reactions and in); Basic chemical laws and concepts (absolute mass of an atom and a molecule; relative atomic and molecular mass; mole concept; Avogadro number; molar mass; chemical equivalent and equivalent; basic chemical laws; Avogadro's law; Clapeyron's equation; Dalton's law; molar volume) ; Stoichiometry (determining the quantitative composition of chemical compounds; determining a chemical formula from the quantitative composition of a chemical compound - empirical formula and real formula; calculations based on chemical equations); Concentrations of the solutions (percentage, mole, normal, mole fraction, ppm and ppb); Chemical equilibrium (the concept of chemical equilibrium; chemical equilibrium constant; defiance rule).

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
passing two written tests (test duration 90 minutes)	50.5%	100.0%

Recommended reading

Basic literature	Calculations in general chemistry - UG script A. Bielański - General and inorganic chemistry
Supplementary literature	F.A. Cotton, G. Wilkinson, P.L. Gaus Inorganic chemistry

	eResources addresses	
Example issues/ example questions/ tasks being completed	- illustrate and describe the properties of elements and their compounds using chemical equations, - solve the redox reaction using the chosen method - determine the stoichiometry for the given reaction, - determine the efficiency of the process, calculate the amounts of substrates and the resulting products. - determine the percentage and molar concentration of a given solution	
Work placement	Not applicable	

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