GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Chemistry I, PG_00037332		
Field of study	Nanotechnology		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2021/2022
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	blended-learning
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Solid State Physics -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Katarzyna Kazimierczuk	
	Teachers	dr hab. Katarzyna Kazimierczuk dr inż. Mateusz Daśko dr inż. Damian Rosiak	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	45.0	0.0	0.0	0.0	0.0	45

E-learning hours included: 43.0

Adresy na platformie eNauczanie:
Chemia I, Nanotechnologia, I semestr - 2021/2022 - Moodle ID: 18535
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18535

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	45	15.0	65.0	125

Subject objectives

The aim of this course is the repetition of basic chemical knowledge.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W05	- can give examples of basic organic and inorganic compounds, describe their properties and give typical reactions. - do basic calculations	[SW1] Assessment of factual knowledge
K6_U01	- student presents wider knowledge in chosen fields of chemistry - student uses knowledge in solving problem, not only in the chemistry field	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
K6_W01	- can give examples of chemical substances used in every-day life - can give examples of polymers produced in a large scale	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Periodic Table and the properties of the elements. Periodic Table and atomic structure. Electronic configuration of atoms.

Types of bonds. Molecular orbitals. Nomenclature, synthesis and properties of basic inorganic substances: oxides and hydrides.Nomenclature, synthesis and properties of basic inorganic substances: acids and bases. Nomenclature, synthesis and properties of basic inorganic substances: salts. Every-day applications of inorganic compounds. Ions and the chemistry of ionic substances: electrolytes; dissociation; weak acids and weak bases; hydrolysis.

Ions and the chemistry of ionic substances: reactions in aqueous solution: metathesis and redox reactions; oxidation numbers; the activity series. Stoichiometry, formulas and equations: Gas Laws, the mole, balancing chemical equations etc.

Volumetric analysis: concentration of solution. Volumetric analysis: acids, bases and salts, neutralization, pH, pH indicators, buffers. Saturated, unsaturated, and aromatic hydrocarbons. Source, properties and applications. Alcohols, thiols, amines and ethers. Source, properties and applications. Aldehydes and ketones. Source, properties and applications. Carboxylic acids and their derivatives. Source, properties and applications. Polymers: synthesis and every-day applications. Chemistry of biomolecules. The biological roles of proteins, carbohydrates, nucleic and lipids.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of chemistry, physics and mathematics is required.</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>Midterm exams</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>Any high school chemistry handbook.

J. D. Lee - Zwięzła chemia nieorganiczna

L. Jones, P. Atkins- Chemistry: Molecules, Matter, and Change</td></tr><tr><td>Supplementary literature</td><td>A. Bielański Chemia ogólna i nieorganiczna

McMurry - Organic chemistry.</td></tr><tr><td>eResources addresses</td><td>Chemia I, Nanotechnologia, I semestr - 2021/2022 - Moodle ID: 18535
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18535</td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1.Polarized covalent bonds. Give an example of compound.

2.Calculate the % and molar concentration of potassium hydroxide solution, obtained by introducing of 39 g of potassium into 500 g of water. The solution density is 1.09 g/cm^3.

3.Write down the reactions:

a) neutralizing of magnesium hydroxide

b) synthesis of sulfuric(VI) acid</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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