University of Gdańsk

Subject card

Subject name and code	Chemical safety, PG_00121306						
Field of study	Chemical Business						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
Education level	Bachelor's studies		Subject group	Optional subject group			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	2.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Department of Environmental Analysis -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Łukasz Haliński					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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	1. To familiarize with the environmental and human hazards caused by chemical compounds; 2. To introduce to the main environmental pollutants and their physicochemical characteristics; 3. To familiarize with methods of predicting the environmental fate of chemicals; 4. To familiarize with methods of estimating the risk resulting from the presence of compounds in the environment; 5. Assessing chemical safety in the laboratory and in the work environment; 6. Fundamentals of classification of compounds in terms of chemical hazards; 7. To introduce to the basics of EU legislation regarding chemical compounds.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_U08] Uses the chemical nomenclature and engineering terminology properly.	Students correctly answer open-ended questions on knowledge of the hazards of chemical compounds in the environment.	[SU4] test/exam - oral or written
[BCHINŻ_K02] Works individually demonstrating initiative and independence in actions, and effectively cooperates in a team, performing various roles in it.	Students demonstrate the ability to do laboratory and conceptual work independently and in a group.	[SK2] presentation/project/paper/ report [SK4] test/exam - oral or written
[BCHINŻ_W06] Enumerates basic unit processes and describes issues in the field of technology and chemical engineering.	Students are able to propose solutions for reducing the occurrence of harmful chemicals in the environment.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[BCHINŻ_W02] Enumerates basic laws and theories in chemistry, physics and mathematics necessary to formulate and solve simple engineering tasks.	Student are able to estimate, on the basis of theoretical and experimentally determined physicochemical properties of substances, the risks associated with the presence of a chemical compound in the environment.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[BCHINŻ_K01] Identifies the level of her/his own knowledge and skills as well as the need to update engineering knowledge, continuous professional training and personal development.	During the development of experimental results, students are able to define gaps in their knowledge and fill them by searching and citing the literature on the subject, thus understanding the need for further education.	[SK2] presentation/project/paper/ report
[BCHINŻ_W10] Applies safety and hygiene principles when working on a test and measurement stand or in the field.	Students are responsible for the safety of their own work and that of others, are careful in handling chemical substances, are prudent in handling measuring apparatus.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[BCHINŻ_K05] Is convinced of the importance of behaving in a professional manner in every situation, taking full responsibility in the field of engineering activities and their impact on the natural environment and compliance with the principles of professional ethics.	Students consciously assess the impact of human activities on the environment, locally and globally.	[SK2] presentation/project/paper/ report [SK4] test/exam - oral or written
[BCHINŻ_K04] Demonstrates responsibility for the safety of her/ his own and others' work.	Students are responsible for the safety of their own work and that of others, are careful in handling chemical substances, are prudent in handling measuring apparatus.	[SK2] presentation/project/paper/ report [SK4] 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.	Students prepare laboratory reports on the experiments performed.	[SU2] presentation/project/paper/ report
[BCHINŻ_U03] Plans, selects the appropriate research and measuring equipment and performs simple chemical experiments; analyses the results and draws conclusions based on them.	Students demonstrate the ability to plan and carry out basic physicochemical measurements and experiments relevant to chemical processes occurring in the environment.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[BCHINŻ_U01] On the basis of the acquired knowledge, identifies, analyses and solves engineering tasks and problems in broadly understood chemistry.	Students analyze aspects related to the negative impact of anthropogenic environmental pollution on various engineering and technological processes.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written

Subject contents

Determination of selected physicochemical parameters of organic compounds by classical and instrumental techniques. Studying the influence of external conditions on the behaviour of chemical compounds. Evaluation of the persistence of chemical compounds, their accumulation in the environment and (eco)toxicity.

Prerequisites and co-requisites

Knowledge of the basics of general, inorganic, organic and analytical chemistry including: structure and physicochemical properties of basic groups of organic and inorganic compounds, knowledge of chemical nomenclature, ability to apply basic formulas from stoichiometry, calculation of concentrations of solutions, knowledge and ability to use laboratory glassware, operation of basic measuring instruments, application of safety rules for working in a chemical laboratory.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory reports (120 min)	51.0%	50.0%
Written test on each class (10 min)	51.0%	50.0%

Recommended reading	Basic literature	Alloway B.J., Ayres D.C. Chemiczne podstawy zanieczyszczania środowiska, PWN, Warszawa, 1999. Manahan S.E. Toksykologia środowiska. Aspekty chemiczne i biochemiczne, PWN, Warszawa, 2010. Van Loon G.W., Duffy S.J. Chemia środowiska, PWN, Warszawa, 2008. K.H. Tan, Principles of soil chemistry, CRC Press Szczepaniak W. Metody instrumentalne w analizie chemicznej, PWN, Warszawa, 2005
	Supplementary literature	Lack
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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