University of Gdańsk

Subject card

Subject name and code	Chemical and radiochemical trace analysis, PG_00054828		
Field of study	Environmental Protection		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	postgraduate 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	1.0
Learning profile	academic	Assessment form	
Conducting unit	Pracownia Toksykologii i Ochrony Radiologicznej -> Katedra Chemii i Radiochemii Środowiska -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Grzegorz Olszewski	
	Teachers	dr hab. Alicja Boryło	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	15.0	0.0	0.0	0.0	15

E-learning hours included: 0.0

Additional information:
Solving tasks

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	15	2.0	8.0	25

Subject objectives

familiarizing students with all issues mentioned in the lecture program content, introducing students to the basics of chemical calculations in radiochemistry, radiological protection, electrochemistry and spectroscopy, developing the ability to independently experiment, perform measurements and solve problems while conducting experiments and measurements.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚMU2_W04] Chooses methods, techniques and research tools used in environmental protection.	recognizes basic equipment in radiochemistry, electrochemistry and spectrophotometry and is able to use it appropriately to carry out measurements	[SW1] oral statement/ conversation/discussion
[OŚMU2_W09] Applies safety and hygiene principles when working independently on a test or measurement stand in a laboratory or in the field.	knows the basic principles of safe work with substances and mixtures chemicals (radioactive elements)	[SW1] oral statement/ conversation/discussion
[OŚMU2_K02] Recognises threats, creates safe work conditions and is responsible for the safety of own and other people's work.	demonstrates creativity in independent and team work, is careful when handling chemicals,	[SK1] oral statement/conversation/ discussion
[OŚMU2_K01] Behaves in a professional manner at all times; bears full responsibility for the actions taken relating to the protection of the environment and respects the principles of professional ethics and principles of intellectual honesty.	can present in an understandable way, both orally and in writing correct reasoning from trace analysis, predicts, verifies and criticizes the results experiments, is able to statistically analyze analytical results and critically analyze them evaluation	[SK4] test/exam - oral or written
[OŚMU2_U03] Plans and performs research tasks in the field or laboratory and interprets research results on environmental issues (working individually or in a team assuming various roles, including managerial functions).	understands the need for further education in trace analysis, demonstrates creativity in independent and team work	[SU1] oral statement/conversation/ discussion
[OŚMU2_U02] Uses advanced measurement and analytical techniques used in environmental protection.	analyzes and solves tasks in radiometry, electrochemistry and spectroscopy, recognizes the basic equipment in radiochemistry, electrochemistry and spectrophotometry and is able to use it appropriately to carry out measurements, is able to calculate the decrease in the activity of radioactive elements over time, is able to calculate the weakening of ionizing radiation by fixed shutters	[SU4] test/exam - oral or written

Subject contents

Issues of the auditorium exercises: basic types of computational tasks related to calculating the activity of radioactive substances, determining working conditions within radiological protection and estimating the attenuation of ionizing radiation, as well as selected electrochemical techniques (potentiometry - assessment of the acidity of natural products, potentiometric titration, use of ion-selective electrodes, electrogravimetry and titration coulometric - determination of antimony(III) or thiosulfate and spectroscopy in the UV-VIS range - spectrophotometric determination of selected ions in aqueous solutions, e.g. Ni(II) and Co(II)).

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test	50.0%	100.0%

Recommended reading	Basic literature	B. Gostkowska Wielkości, jednostki i obliczenia stosowane w ochronie radiologicznej, CLOR, Warszawa 1991, A. Skłodowska, B. Gostkowska Promieniowanie jonizujące a człowiek i środowisko, SCHOLAR, Warszawa 1994 A. Cygański Metody elektroanalityczne, WNT, Warszawa 1995 W. Szczepaniak Metody instrumentalne w analizie chemicznej, PWN Warszawa - Poznań 1979 (A. Cygański Metody spektroskopowe w chemii analitycznej, WNT, Warszawa 1993 A. Cygański, B. Ptaszyński, J. Krystek Obliczenia w chemii analitycznej, WN-T, Warszawa 2000
	Supplementary literature	None
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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