

**Subject card**

<b>Subject name and code</b>	Environmental chemistry and radiochemistry, PG_00081855						
<b>Field of study</b>	Chemistry						
<b>Date of commencement of studies</b>	October 2024	<b>Academic year of realisation of subject</b>				2026/2027	
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>				Obligatory subject group in the field of study Optional subject group	
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>				at the university	
<b>Year of study</b>	3	<b>Language of instruction</b>				Polish	
<b>Semester of study</b>	6	<b>ECTS credits</b>				2.0	
<b>Learning profile</b>	academic	<b>Assessment form</b>				credit	
<b>Conducting unit</b>	Faculty of Chemistry -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr Grzegorz Olszewski				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	30		5.0		15.0	50
<b>Subject objectives</b>	To familiarize students with the basics of trace analysis and the phenomena of natural and artificial radioactivity. Familiarizing students with analytical and radiochemical methods in environmental research. To familiarize students with the basics of radiometry, dosimetry and radiological protection. To familiarize students with the validation of chemical and radiochemical methods						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.	understands the need for further education in the field of chemistry and radiochemistry environment,  knows the basic principles of safe work with toxic substances and isotopes radioactive, raises public awareness of the impact of radioactivity and substances toxic to human life,  knows chemometric methods used in chemical analysis of samples environmental.	[SK4] test/exam - oral or written
	[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	knows and understands basic concepts of environmental chemistry and radiochemistry,  knows and understands analytical and spectroscopic methods used for the quantitative determination of radioactive elements and nuclides,  understands the concept and application of validation in trace analysis and distinguishes and applies it basic criteria for assessing analytical results	[SW4] test/exam - oral or written
	[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.	predicts, verifies and critically analyzes the results experiments,	[SW1] oral statement/ conversation/discussion
[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.	in an understandable way, can present correct reasoning in chemistry and environmental radiochemistry,  knows modern techniques and instrumental methods for the determination of trace elements and radionuclides is aware of the importance of natural and artificial radioactivity in life human,	[SU4] test/exam - oral or written	
Subject contents	Trace analysis in environmental research, research methods and techniques. Natural and artificial radioactivity, radioactive elements in nature, radiometry and radiochemical methods, doses of ionizing radiation, radiotoxicity and radiological protection, sources of radioactive contamination in the natural environment. Validation in chemical and radiochemical analysis, criteria for assessing analytical results.		
Prerequisites and co-requisites	analytical chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	51.0%	100.0%
Recommended reading	Basic literature	Skwarzec Bogdan Environmental radiochemistry and radiological protection, Wydawnictwo DJ s.c., Gdańska, 2002. Skwarzec Bogdan Environmental Radiochemistry, UG Publishing House, 2021 Trace analysis, edited by I. Baranowska, MALAMUT Publishing House, Warsaw, 2013.	
	Supplementary literature	None	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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