University of Gdańsk

Subject card

Subject name and code	Environmental chemistry and radiochemistry, PG_00081855						
Field of study	Chemistry						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study 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	6		ECTS credits	2.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Grzegorz Olszewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	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		15.0	50
Subject objectives	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						

<table>
<tr><td>Learning outcomes</td><td>
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<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.</td><td>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.</td><td>[SK4] test/exam - oral or written</td></tr>
<tr><td>[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.</td><td>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</td><td>[SW4] test/exam - oral or written</td></tr>
<tr><td>[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.</td><td>predicts, verifies and critically analyzes the results experiments,</td><td>[SW1] oral statement/ conversation/discussion</td></tr>
<tr><td>[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.</td><td>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,</td><td>[SU4] test/exam - oral or written</td></tr>
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<tr><td>Subject contents</td><td>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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>analytical chemistry</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>Test</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Skwarzec Bogdan Environmental radiochemistry and radiological protection, Wydawnictwo DJ s.c., Gdańska, 2002.Skwarzec Bogdan Environmental Radiochemistry, UG Publishing House, 2021Trace analysis, edited by I. Baranowska, MALAMUT Publishing House, Warsaw, 2013.</td></tr>
<tr><td>Supplementary literature</td><td>None</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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