University of Gdańsk

Subject card

Subject name and code	Chemical analysis of biomolecules, PG_00103526						
Field of study	Environmental Protection						
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	1.0			
Learning profile	academic		Assessment form	credit			
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Piotr Mucha				
	Teachers						
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						
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	to familiarize students with the basic issues of interaction of electromagnetic radiation with matter, the basics of UV-Vis spectrometry and spectrofluorimetry and their use in the analysis of selected biologically active compounds- to familiarize students with the physicochemical properties and possibilities of separation of peptides, proteins and nucleic acids by chromatographic and electrophoretic methods- to develop the ability to critically evaluate and interpret the obtained experimental results and analyze source texts						

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<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>[OŚL3_K05] Identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development.</td><td>-appreciates the necessity of teamwork skills through discussion and proposing own solutions to the problem questions posed
takes care of the laboratory equipment entrusted to him and takes due care in handling laboratory equipment and in working with chemical reagents
-shows cautious criticism in accepting information, especially that available in the mass media
-has an awareness of honest and reliable work</td><td>[SK4] test/exam - oral or written</td></tr>
<tr><td>[OŚL3_W06] Characterises levels of life organization, biodiversity and the interaction of organisms and the environment.</td><td>- is able to propose the use of a specific separation technique for the analysis of selected biologically active compounds
- analyzes the results of conducted experiments, draws conclusions about the regularity of their course</td><td>[SW4] test/exam - oral or written</td></tr>
<tr><td>[OŚL3_U04] Uses specialist language in the discussion and properly uses the nomenclature in the field of environmental protection and individual disciplines related to it.</td><td>- uses biological and chemical terminology to the extent necessary for the presentation (in written and oral form) of the subject curriculum content</td><td>[SU4] test/exam - oral or written</td></tr>
<tr><td>[OŚL3_W02] Characterises the relationships and relationships between various disciplines of natural sciences and science, uses knowledge of mathematics, physics, chemistry and biology in the description of basic concepts, concepts and principles in environmental protection.</td><td>- predicts the physicochemical properties and selected groups of biologically active compounds based on their structure and their impact on the environment</td><td>[SW4] test/exam - oral or written</td></tr>
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<tr><td>Subject contents</td><td>Characterization of electromagnetic radiation, laws of absorption, fundamentals and application of UV-Vis spectroscopy, fundamentals and application of fluorescence, fundamentals, characterization and application of basic chromatographic techniques, fundamentals of gel electrophoresis, characterization of basic electrophoretic techniques, electrophoresis of proteins and nucleic acids</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>credit</td><td>50.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>J. M. Berg, J. L. Tymoczko, L. Stryer, Biochemia, PWN, Warszawa 2009.Szczepaniak W. Metody instrumentalne w analizie chemicznejWitkiewicz Z., Podstawy chromatografii, WNT, 2000,</td></tr>
<tr><td>Supplementary literature</td><td>Kołodziejczyk A., Naturalne związki organiczneKłyszejko-Stefanowicz L., Ćwiczenia z Biochemii</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>The affinity of proteins A, B and C for hemoglobin mRNA (about 600 nucleotide residues) was tested on the gel. The proteins had similar mass and pI values. mRNA bound strongly to protein C, weakly to protein A, while showing no affinity for protein B. Draw the appearance of the gel resulting from such an experiment. On which gel can it be performed?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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