University of Gdańsk

Subject card

Subject name and code	Chemical analysis of biomolecules, PG_00103527						
Field of study	Environmental Protection						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
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							
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	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	- 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						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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.	-understands the need for continuous and systematic education -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	[SK3] text preparation/written work [SK8] observation of student's independent or team work
[OŚL3_W06] Characterises levels of life organization, biodiversity and the interaction of organisms and the environment.	- predicts the physicochemical properties and selected groups of biologically active compounds based on their structure and their impact on the environment	[SW3] text preparation/written work
[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.	- uses biological and chemical terminology to the extent necessary for the presentation (in written and oral form) of the subject curriculum content	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[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.	- 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	[SW3] text preparation/written work

Subject contents

Performing experiments involving issues related to the separation and chemical analysis of naturally derived compounds such as sugars, lipids, alkaloids, plant pigments, and proteins, using spectroscopic and chromatographic techniques

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Evaluation of completed exercises and reports	50.0%	100.0%

Recommended reading

Basic literature	J. M. Berg, J. L. Tymoczko, L. Stryer, *Biochemia,* PWN, Warszawa 2009. Szczepaniak W. Metody instrumentalne w analizie chemicznej Witkiewicz Z., Podstawy chromatografii, WNT, 2000,
Supplementary literature	Kołodziejczyk A., Naturalne związki organiczne Kłyszejko-Stefanowicz L., Ćwiczenia z Biochemii
eResources addresses	

Example issues/ example questions/ tasks being completed

Draw a schematic distribution of the striations (on two paths) formed on a polyacrylamide gel as a result of digesting samples of the depicted DNA fragment with restriction enzymes. One sample digested with EcoR1 enzyme, the other with a mixture of EcoR1 and BamH1 enzymes. Assume that the cut occurs in the middle of the palindromic sequence. The formation of sticky ends can be neglected.

Work placement

Not applicable

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