

Subject card

Subject name and code	Physic with elements of biophysics, PG_00207406						
Field of study	Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Donata Figaj				
	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		3.0		42.0	75
Subject objectives	1. Learning the most important laws of physics and the rules governing the underlying chemical reactionsbiological processes and physical properties of elements and chemical compounds. 2. Understandingbasic biophysical processes. 3. Ability to perform and interpret independentlybiophysical experiences.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLL3_W04] knows and understands at an advanced level the experimental methods and techniques used in biological sciences, as well as the principles of evaluation and analysis of natural processes and phenomena using physical and chemical measurements and IT tools for data processing and interpretation		
	[BIOLL3_U01] is able to use basic research techniques and tools appropriate for the biological sciences and perform physical, chemical and biological observations and measurements in the laboratory and in the field, individually and in a team, while organizing her/his work appropriately and in a maintained way		
	[BIOLL3_K02] is ready to take care for her/his own safety and that of others, identifying threats and taking appropriate action, as well as use verified equipment and materials responsibly, ensuring their proper use		
Subject contents	Experimental introduction to selected physical issues (fluorescence, spectroscopyabsorption, calorimetry, enthalpy, refractometry, sedimentation). Learning and using techniquesbiophysical in biology.		
Prerequisites and co-requisites	Solving biochemical tasks (converting concentrations, preparing solutions, calculating solution concentrations, mixing solutions).		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report from laboratory classes	0.0%	17.0%
	test	50.0%	83.0%
Recommended reading	Basic literature	1. Biofizyka, collective work edited by Zofia Jóźwiak and Grzegorz Bartosz, PWN, 2008. Principles of fluorescence spectroscopy, 3rd edition, Joseph Lakowicz, Springer Science, 2006. Biophysics. Selected issues with exercises. Z. Jóźwiak, G. Bartosz, PWN, Warsaw, 2005	
	Supplementary literature	Physical chemistry. Short lectures. A.G. Whittaker, A. R. Mount, M. R. Heal, PWN, Warsaw 2003;	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Direct and indirect calorimetry2. Sedimentation centrifugation3. Jabłoński's diagram4. Exaltation of molar refraction5. Protein denaturation6. Enthalpy and entropy		
Work placement	Not applicable		