

Subject card

Subject name and code	General biochemistry, PG_00196824						
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	Laboratory of Microbial Biochemistry -> Department of General and Medical Biochemistry -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Karolina Stojowska-Swędryńska				
	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		6.0		39.0	75
Subject objectives	The aim of the exercises is to familiarize students with the structure and function of macromolecules (nucleic acids, proteins, sugars, lipids) and with laboratory biochemical techniques used to analyze macromolecules and biochemical processes. An additional goal is for students to acquire the ability to independently perform biochemical experiments and interpret the results.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLL3_U12] The graduate is able to use Polish and foreign languages specific to biology in a way that is understandable and accessible to both specialists and non-specialists	The student is able to use specialized biology language (with particular emphasis on biochemical terms) in a way that is understandable and accessible to both specialists and non-specialists.	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[BIOLL3_U02] The graduate is able to make observations individually and in teams, and carry out basic physical, biological and chemical measurements in the field or laboratory	The student independently and in a team carries out observations and basic physical, biological and biochemical measurements in the laboratory.	[SU2] presentation/project/paper/report
	[BIOLL3_U01] The graduate is able to use basic apparatus and research tools and follow the correct sequence of operations in laboratory and field work	The student uses basic research equipment and tools and maintains the correct sequence of activities in laboratory work.	[SU2] presentation/project/paper/report
	[BIOLL3_W02] The graduate knows and understands at an advanced level the structure and properties of biological macromolecules, molecular mechanisms of basal metabolic pathways and the flow of genetic information, as well as the sources of variation in organisms; the rules of inheritance	The student describes the structure, properties and functions of basic types of biological macromolecules and the mechanisms of biochemical methods.	[SW4] test/exam - oral or written
	[BIOLL3_K06] The graduate is prepared to take responsibility for the entrusted equipment/materials and for his/her own work and the work of others	The student is responsible for the provided laboratory equipment, apparatus, materials and reagents. He is responsible for his own work and respects the work of others.	[SK8] observation of student's independent or team work
[BIOLL3_K05] The graduate is prepared to take responsibility for the safety of his/her and that of others, as well as to recognize hazardous situations and take appropriate action	The student is responsible for the safety of his own work and that of others and is able to recognize hazardous situations and take appropriate actions.	[SK8] observation of student's independent or team work	
Subject contents	<ul style="list-style-type: none"> Structure, function and properties of basic macromolecules: nucleic acids, proteins, carbohydrates, lipids. Methods of separation and analysis of nucleic acids and proteins (agarose and polyacrylamide electrophoresis). Methods of identification and analysis of biochemical properties of selected macromolecules.- Methods of separating molecules due to differences in molecular weight (molecular filtration). Structure and functions of enzymes, methods of determining enzymatic activity, enzyme inhibition. Chromatographic methods (thin layer chromatography, paper chromatography). 		
Prerequisites and co-requisites	Completion of courses covering general and organic chemistry. Knowledge of the structure of basic inorganic and organic compounds, isomerism, chemical bonds, mechanisms of basic chemical reactions, energetics of chemical reactions, hydrophobic interactions, acids and bases, pH, units of measurement, solution concentration units, ability to calculate solution concentrations.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written reports of laboratory experiments	50.1%	30.0%
	Test with closed and open questions	50.1%	70.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> Instructions for laboratory classes (provided by the laboratory coordinator) (in Polish) 	

	Supplementary literature	<p>(Textbooks in Polish):</p> <ul style="list-style-type: none"> • Berg J. M., Tymoczko J. L., Stryer L. 2017. Biochemia. PWN, Warszawa • Berg J. M., Stryer L., Tymoczko J. L., Biochemia. Krótki kurs. PWN Warszawa 2013 • Kłyszajko-Stefanowicz L. (red.). 2005. Ćwiczenia z biochemii. PWN, Warszawa • Hames B. D., Hooper N.M. 2007. Krótkie wykłady: Biochemia. PWN, Warszawa
	eResources addresses	
Example issues/ example questions/ tasks being completed	Differences in the structure of RNA and DNA, characteristic features of plasmid DNA, amino acid structure, what is the isoelectric point, what is molecular filtration, what is the active center of the enzyme, list the differences between competitive and non-competitive inhibition, What is the Biuret reaction used for, what is an amphiphilic molecule.	
Work placement	Not applicable	

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