University of Gdańsk

Subject card

Subject name and code	General biochemistry, PG_00207402						
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-Swędrzyńska				
	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		4.0		41.0	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_W02] knows and understands at an advanced level the structure and properties of biological macromolecules, mechanisms of metabolism, flow of genetic information, sources of variation in organisms; 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_U07] is able to present and justify her/his adopted position, using appropriate scientific argumentation, adapted to various audiences, and take part in discussions or debates		
[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

- 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
Test with closed and open questions	50.1%	70.0%
Written reports of laboratory experiments	50.1%	30.0%

Recommended reading

Basic literature	• Instructions for laboratory classes (provided by the laboratory coordinator) (in Polish)
Supplementary literature	(Textbooks in Polish): • 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 • Kłyszejko-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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