



Subject card

Subject name and code	Enzymology, PG_00054732						
Field of study	Biotechnology						
Date of commencement of studies	October 2025		Academic year of realisation of subject			2028/2029	
Education level	first-cycle 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	4		Language of instruction			Polish	
Semester of study	7		ECTS credits			2.0	
Learning profile	general academic profile		Assessment form			assessment	
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Iwona Gabriel				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	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		2.0		18.0	50
Subject objectives	Broadening the knowledge of the Enzymology field						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_W05	The student identifies the basic classes of enzymes. Recognizes the properties of enzymes as biocatalysts. Explains the molecular basis of enzyme catalysis, inhibition and inactivation. Recognizes methods of enzyme structures determination. Identifies chemical and spectral methods of the active site characterisation. Defines methods of physiological regulation of enzyme activity. Describes the importance of enzymes in biotechnology and medicine.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	K6_W09	The student explains the strategy of the protein purification process. Recognizes the methods used in the protein purification process, including: cell disintegration methods, chromatographic separation methods, electrophoretic methods.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	K6_W06	The student identifies the basic classes of enzymes. Recognizes the properties of enzymes as biocatalysts. Explains the molecular basis of enzyme catalysis, inhibition and inactivation. Recognizes methods of enzyme structures determination. Identifies chemical and spectral methods of the active site characterisation. Defines methods of physiological regulation of enzyme activity. Describes the importance of enzymes in biotechnology and medicine.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
Subject contents	Course content – lecture LECTURE General characteristics of enzymes. Enzymes as catalysts. Classification and nomenclature. The specificity of the enzyme activity. Mono- and oligomeric enzymes. Cofactors. The basic elements of the structure enzymes and the molecular basis of enzymatic catalysis. Active center. The theory of induced fit. Transition state theory. Strategy in the enzyme purification. Methods for determining the structure of the enzyme. Determination of the molecular weight. Determination of amino acid composition. Determination of the 3D structure. Chemical and spectral methods for analyzing the active center of the enzyme. Enzyme kinetics. inhibition and inactivation. Molecular mechanisms of enzymatic reactions. Types of enzymes inhibitors. Methods for physiological regulation of enzyme activity. Rybozymes.		
Prerequisites and co-requisites	Basic knowledge of biochemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test II	60.0%	50.0%
	Test I	60.0%	50.0%
Recommended reading	Basic literature	1. Biochemia / Jeremy M. Berg, Lubert Stryer, John L. Tymoczko, Gregory J. Gatto. Warszawa, 2019 2. Enzymologia : podstawy / Sławomir Strumiło, Adam Tylicki. Wydanie I. Warszawa, 2020	
	Supplementary literature	Not applicable	
	eResources addresses		

Example issues/ example questions/ tasks being completed	General characteristics of enzymes. Active center. Chemical and spectral methods for analyzing the active center of the enzyme. Enzyme kinetics. Inhibition and inactivation. Molecular mechanisms of enzymatic reactions. Methods for physiological regulation of enzyme activity. Enzymes in biotechnology.
Practical activities within the subject	Not applicable

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