



Subject card

Subject name and code	BASIC OF BIOCHEMISTRY, PG_00048064						
Field of study	Chemistry						
Date of commencement of studies	October 2023	Academic year of realisation of subject				2025/2026	
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	3	Language of instruction				Polish	
Semester of study	6	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	dr hab. inż. Iwona Gabriel					
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						
	eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=5016 Moodle ID: 5016 PODSTAWY BIOCHEMII_25/26 https://enauczanie.pg.edu.pl/2025/course/view.php?id=5016						
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	The main objective of the course is to gain knowledge about the structure and role of components of living cells, including proteins, nucleic acids, polysaccharides and lipids, as well as the main pathways of cellular metabolism.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W05] knows and understands the chemical processes and algorithms of mathematical models which are necessary for the design of technological processes, knows chemical structure of contemporary materials and its relation to their properties, enabling the selection of the materials for sustainable development technology and material-efficient and energy-efficient methods	knows the physical and biochemical basis of biocatalysis.			[SW1] Assessment of factual knowledge		
	K6_W02	knows the basic principles of the structure of biomacromolecules.			[SW1] Assessment of factual knowledge		
[K6_W06] has a basic knowledge about the use of micro-organisms and their metabolic products in the production of goods and services, taking into account, inter alia, the role of genetic engineering, necessary for the application of biotechnological processes in various areas: food, chemical and mining industries, fuel production, agriculture and environmental protection	knows the basic experimental techniques in the field of biochemistry. The student knows the main metabolic pathways and is able to assess the consequences of metabolic disorders.			[SW1] Assessment of factual knowledge			

Subject contents	Course content – lecture 1. Biomolecules - amino acids, peptides and proteins 2. Biomolecules - sugars and polysaccharides 3. Biomolecules - lipids. Structure of biological membranes, transport 4. Enzymes - structure, mechanisms of action and activity regulation 5. Main catabolic pathways - glycolysis, Krebs cycle, respiratory chain, fatty acid oxidation 6. Examples of anabolic pathways 7. High-energy compounds 8. Integration and regulation of metabolism 9. Gene expression. Genetic code 10. Etiology of inborn metabolic diseases 11. DNA replication Transcription. Protein biosynthesis.		
Prerequisites and co-requisites	Knowledge of issues in the field of general chemistry: chemical bonds; intermolecular interactions; types and mechanisms of chemical reactions; properties of water, aqueous solutions. Knowledge of issues in the field of organic and physical chemistry: organic compounds - types and reactivity; theory of catalysis, thermodynamics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test II	50.0%	50.0%
	Test I	50.0%	50.0%
Recommended reading	Basic literature	Harpers Illustrated Biochemistry , 2018, ed. VII; Victor W. Rodwell, David A. Bender, Kathleen M. Botham, Peter J. Kennelly, Anthony P. Weil; Publisher: PZWL	
	Supplementary literature	Biochemistry; 2018; Berg Jeremy M. , Tymoczko John L. , Stryer Lubert , Gatto Gregory J. Publisher PWN;	
	eResources addresses		
Example issues/ example questions/ tasks being completed	not applicable		
Practical activities within the subject	Not applicable		

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