GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	BASIC OF BIOCHEMISTRY, PG_00048064		
Field of study	Chemistry		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
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		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Iwona Gabriel	
	Teachers	dr hab. inż. Iwona Gabriel	

Lesson types and methods of instruction

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	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_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	The student 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
[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	The student knows the physical and biochemical basis of biocatalysis.	[SW1] Assessment of factual knowledge
K6_W02	The student knows the basic principles of the structure of biomacromolecules.	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td colspan="3">1. Structure of prokaryotic and eukaryotic cells 2. Biomolecules - amino acids, peptides and proteins 3. Biomolecules - sugars and polysaccharides 4. Biomolecules - lipids. Structure of biological membranes, transport 5. Enzymes - structure, mechanisms of action and activity regulation 6. Main catabolic pathways - glycolysis, Krebs cycle, respiratory chain, fatty acid oxidation 7. Examples of anabolic pathways 8. High-energy compounds 9. Integration and regulation of metabolism 10. Gene expression. Genetic code 11. DNA replication 12. DNA mutations, mechanisms of mutagenesis and DNA damage repair 13. Etiology of inborn metabolic diseases 14. Transcription 15. Protein biosynthesis. 16. Biochemistry of selected physiological processes</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">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 and reaction kinetics.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Test II</td><td>50.0%</td><td>50.0%</td></tr><tr><td>Test I</td><td>50.0%</td><td>50.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Harpers Illustrated Biochemistry , 2018, ed. VII; Victor W. Rodwell, David A. Bender, Kathleen M. Botham, Peter J. Kennelly, Anthony P. Weil; Publisher: PZWL</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Biochemistry; 2018; Berg Jeremy M. , Tymoczko John L. , Stryer Lubert , Gatto Gregory J. Publisher PWN;</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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