



Subject card

Subject name and code	Biochemistry, PG_00037491						
Field of study	Biotechnology						
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025				
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	5	ECTS credits	6.0				
Learning profile	general academic profile	Assessment form	exam				
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Zofia Mazerska					
	Teachers						
Lesson type and method of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	60.0	15.0	0.0	0.0	0.0	75
	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	75	10.0	65.0	150		
Subject objectives	To know the background knowledge about the function of living organisms in the field of biochemical data, means in the field of chemical structures, physicochemical interactions and biological processes						
Learning outcomes	Course outcome	Subject outcome	Method of verification				
	K6_W06						
	K6_W05	Know the background about the function of living organisms on the level of biochemical processes, taking into account the differences between eucaryotic and procaryotic cells					

Subject contents	<p>1. Introduction</p> <p>2. Proteins, the structures and functions.</p> <p>3. DNA, RNA genetic information translation,</p> <p>4. Enzymes, the catalytic and and regulatory strategy,</p> <p>5. Carbohydrates, structures, physiological function, binding with the membrane proteins.</p> <p>6. Lipids in the function of biological membranes,</p> <p>7. Metabolic transformations in the cell, ATP in the role of the universal energy transporter,</p> <p>8. Glicolysis pathway and gluconeogenesis,</p> <p>9. Cytric acid cycle, Synthesis of acetylcoenzymeA, the stechiometry and control mechanisms,</p> <p>10. Oxidative phosphorylation. From NADH to O2 in the mitochondrium,, redox potential,</p> <p>11. Photosynthesis. Chloroplasts and tylacoid membrane. NADPH and proton gradient,</p> <p>12. Lipid acids metabolism, degradation and biosynthesis. CoA activation, carnityne function. Biodegradation versus biosynthesis pathways.</p> <p>13. The metabolism of nitrogen. The level regulations of proteins and aminoacids</p> <p>14.The integration of metabolic processesin the living organism</p> <p>Biochemistry exercises : The aim is to learn students the effective methods of biochemical process calculations. There is crucial for the preparation of the solutions with proper concentration for biochemical experimets as the rate of biochemical transformations or the molecular mechanisms of biochemical processes</p>											
Prerequisites and co-requisites	The background knowledge in the field of biology, chemistry and physics											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="453 1523 794 1552">Subject passing criteria</th> <th data-bbox="799 1523 1141 1552">Passing threshold</th> <th data-bbox="1145 1523 1482 1552">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 1559 794 1588">Writing and oral exam</td> <td data-bbox="799 1559 1141 1588">60.0%</td> <td data-bbox="1145 1559 1482 1588">80.0%</td> </tr> <tr> <td data-bbox="453 1594 794 1624">calculation exercises</td> <td data-bbox="799 1594 1141 1624">60.0%</td> <td data-bbox="1145 1594 1482 1624">20.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Writing and oral exam	60.0%	80.0%	calculation exercises	60.0%	20.0%
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Recommended reading	<table border="1"> <tbody> <tr> <td data-bbox="453 1635 794 1890">Basic literature</td> <td colspan="2" data-bbox="799 1635 1482 1890"> J.M.Berg, J.L.Tymoczko, L.Stryer, Biochemistry, English version J.L.Tymoczko, J.M.Berg, L.Stryer, Biochemistry, short edition, English version </td> </tr> <tr> <td data-bbox="453 1897 794 1926">Supplementary literature</td> <td colspan="2" data-bbox="799 1897 1482 1926">M.K. Campbell, S.O.Farell, Biochemistry, 2006</td> </tr> <tr> <td data-bbox="453 1933 794 1962">eResources addresses</td> <td colspan="2" data-bbox="799 1933 1482 1962"></td> </tr> </tbody> </table>			Basic literature	J.M.Berg, J.L.Tymoczko, L.Stryer, Biochemistry, English version J.L.Tymoczko, J.M.Berg, L.Stryer, Biochemistry, short edition, English version		Supplementary literature	M.K. Campbell, S.O.Farell, Biochemistry, 2006		eResources addresses		
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Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none">1. Which tricarbon molecules are formed by the degradation of fructoso-1,6-bisfosforan?2. Fosfogliceromutase is responsible for the reactionWhat is it role in the glycolysis3. Present the role of electron transfer from the cytric acid cycle by oxidative phosphorylation to ATP synthesis
Work placement	Not applicable