

Subject card

Subject name and code	Unicellular organisms - Metabolism Fundaments (M03_B3), PG_00197614						
Field of study	Biotechnology						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2026/2027		
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			2.0		
Learning profile	academic	Assessment form			exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr n. med. Dorota Pomorska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	22.0	0.0	0.0	0.0	0.0	22
	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	22		5.0		23.0	50
Subject objectives	The aim of the course is to familiarize the student with the metabolic processes of unicellular organisms, taking into account their living environment.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[BIOTECHL3_W02] The graduate knows and understands at an advanced level selected processes at the cell, tissue and organism level, important from the biological point of view		The student knows and understands the mechanisms of energy acquisition and utilization in microorganisms, including aerobic and anaerobic respiration, fermentation, photosynthesis, and chemosynthesis; understands the processes of macromolecule catabolism and anabolism, as well as cellular transport.			[SW4] test/exam - oral or written	
Subject contents	<p>F1.</p> <p>Sources of energy and matter (1 h) Respiration and nutrition (9 h) - aerobic and anaerobic - nutrition - bacteria, fungi, algae, Protista - fermentations Physiology and metabolism (11 h): - catabolism of macroparticles - synthesis of macroparticles - cellular transport - (energy-dependent transport) Photosynthesis and chemosynthesis of microorganisms (1 h) - photosynthesis of cyanobacteria / algae - chemosynthesis (bacteria and archaea)</p>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Integration exam	50.0%	40.0%
	Part F1	51.0%	60.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> - Życie bakterii Kunicki-Goldfinger, red. J. Baj, Z. Markiewicz, Wydawnictwo Naukowe PWN, W-wa 2005 and newer - Mikrobiologia techniczna. T. 1 Mikroorganizmy i środowiska ich występowania (selected chapters)-Zdzisława Libudzisz (red.), Krystyna Kowal (red.), Zofia Żakowska (red.), 2007, Wydawnictwo Naukowe PWN - Mikrobiologia Murray Rosenthal Wydanie 2018 EDRA URBAN & PARTNER - Microbiology: an introduction. Gerard J. Tortora, Berdell R. Funke, Christine L. Case, 2016, Pearson - Prescotts Microbiology Joanne Willey[10th ed.] 2016. McGraw-Hill Education - Brock biology of microorganisms, global edition, 15/e M. T. Madigan, K. S. Bender, D. H. Buckley, W. M. Sattley, D. A. Stahl, 2018. Pearson. - Skrypt Pracownia inżynierii genetycznej materiały do ćwiczeń Katarzyna Węgrzyn B. 	
	Supplementary literature	<ul style="list-style-type: none"> - Cappuccino, James G.; Welsh, Chad T, Microbiology: A Laboratory Manual, Global Edition Pearson Education Limited : Pearson, 2017 - The Yeasts: Yeast Technology (2012) Anthony H. Rose, J. Stewart Harrison - Scheffler I. E. Mitochondria. 2nd edition. Wiley 2007 	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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