University of Gdańsk

Subject card

Subject name and code	Unicellular organisms - Metabolism Fundaments (M03_B3), PG_00196918		
Field of study	Biotechnology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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

F1.

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)

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Integration exam</td><td>50.0%</td><td>40.0%</td></tr>
<tr><td>Part F1</td><td>51.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>- 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 MicrobiologyJoanne 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.</td></tr>
<tr><td>Supplementary literature</td><td>- 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</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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