University of Gdańsk

Subject card

Subject name and code	Sociomicrobiology, PG_00197622		
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 Optional subject group 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	credit
Conducting unit	Intercollegiate Faculty of Biotechnology Office -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Michał Obuchowski	
	Teachers	prof. dr hab. Michał Obuchowski	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	14.0	0.0	0.0	0.0	0.0	14
	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	14	5.0	31.0	50

Subject objectives	The aim of the course is to develop an understanding of the need to adopt a new way of perceiving microorganismsnot as individual cells, but as functionally connected communities. The student should be able to demonstrate the importance of studying selected microbial processes and behaviors at the population level rather than at the single-cell level. The course also aims to develop awareness of the limitations in analyzing bacterial communities resulting from the use of standard laboratory cultivation methods, and to equip the student with the ability to design a workflow for investigating microbial social behaviors.

<table>
<tr><td>Learning outcomes</td><td>
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<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[BIOTECHL3_W01] The graduate possesses structured and advanced knowledge of biological phenomena at the molecular level and understands their importance for biotechnology.</td><td>The student understands the modern view of microorganisms as functionally integrated communities rather than isolated cells and is familiar with the molecular basis of phenomena such as intercellular communication, functional specialization, biofilm formation, and collective bacterial behaviors.</td><td>[SW4] test/exam - oral or written</td></tr>
<tr><td>[BIOTECHL3_K01] The graduate is aware of the scope of their own knowledge and skills; demonstrates a willingness to continuously update them and pursue professional development.</td><td>The student understands the limitations in studying bacterial communities resulting from the use of laboratory cultivation methods.</td><td>[SK4] test/exam - oral or written</td></tr>
<tr><td>[BIOTECHL3_W03] The graduate possesses structured and advanced knowledge of organism-environment relationships and their importance for understanding biological processes and biotechnological applications.</td><td>The student understands the importance of analyzing microbial behavior and biological processes at the population level rather than the single-cell level, and is able to indicate how they depend on environmental conditions.</td><td>[SW4] test/exam - oral or written</td></tr>
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<tr><td>Subject contents</td><td>Revision of the dogma that bacteria are single-celled organisms in the light of research results in recent years. The issue of individuality of bacterial cells in a genetically homogeneous population. The importance of the sense of density for group behavior of microorganisms and interspecies communication. Biofim - a sessile community of bacteria. Functional specialization within the bacterial biofilm. Coordinated movement of bacteria as a manifestation of collective pursuit of a goal. Cannibalism as a way of preserving the population. Altruistic death among bacteria.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Final colloquium</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
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<tr><td>Basic literature</td><td>Review articles on issues discussed during the lecture provided by the instructor during the classes.
Script "Sociomicrobiology"</td></tr>
<tr><td>Supplementary literature</td><td>None</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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