GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Microbiology, PG_00068809		
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Optional subject group Specialty 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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Beata Krawczyk	
	Teachers	dr hab. Beata Krawczyk	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15
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	15	2.0	8.0	25

Subject objectives

The idea is to introduce students to the techniques used in the microbiological laboratory, acquiring knowledge about the structure and function of a bacterial cell and learning about their role in the human environment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W53] knows and understands, to an increased extent, selected aspects of biomedical diagnostics	The student has an advanced knowledge and understanding of selected methods and tools used in biomedical diagnostics and their application in the identification and monitoring of disease processes. Understands the importance of laboratory diagnostics in the prevention, early detection and monitoring of diseases.	[SW2] Assessment of knowledge contained in presentation
[K7_K02] is ready to provide critical evaluation of received content and to acknowledge the importance of knowledge in solving cognitive and practical problems	the ability to choose a diagnostic method, awareness of sterile work in a microbiological laboratory, distinguish between commensal and pathogenic microorganisms	[SK5] Assessment of ability to solve problems that arise in practice
[K7_W54] knows and understands in-depth selected aspects of biomedical engineering, in particular chemistry, biochemistry, biomaterials and materials science, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences	The student has an advanced knowledge and understanding of selected aspects of microbiology relevant to biomedical engineering, particularly interactions between microorganisms and biomaterials, biochemical processes in microbial cells, and their importance in the biomedical environment.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Why we study microbiology. Classification and identification of microorganisms. The modern classification of Prokaryotes. Microbial growth control, sterilization and disinfection. Microscopes and staining of bacteria. Nutrition of microorganisms, growth of the population of microorganisms (growth phases, cultures of microorganisms, obtaining pure cultures, culture media, special cultivation techniques), storage of cultures. Measurement of microbial growth. General characteristics of prokaryotes (morphology, reproduction, endospores, organization of the prokaryotic cell. Structure and function of the cell) Koch's postulates. Host-microorganism relations - the influence of microorganisms on humans and animals. Natural human microbiota. Basics of pathogenesis.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>lack</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>Quiz</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>• Abigail A. Salyers, Dixie D. Whitt Mikrobiologia, różnorodność, chorobotwórczość i środowisko; PWN
• Color Atlas of Medical Bacteriology. Autorzy: Luis M. de la Maza, Marie T. Pezzlo, Cassiana E. Bittencourt, Ellena M. Peterson.
• Brock Biology of Microorganisms, Global Edition - Michael Madigan, Kelly Bender, Daniel Buckley, W. Sattley, David Stahl</td></tr><tr><td>Supplementary literature</td><td>Prescott's Microbiology. McGraw.Hill International Edition

https://open.oregonstate.education/generalmicrobiology/chapter/introduction-to-microbiology/</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Which sterilization method will we choose for oily substances:

1. dry hot air
2. an autoclave
3. chemicals</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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