



## Subject card

Subject name and code	Microbiology, PG_00053382						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject				2022/2023	
Education level	second-cycle studies	Subject group				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	1	Language of instruction				Polish	
Semester of study	2	ECTS credits				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Microbiology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Beata Krawczyk				
	Teachers		dr hab. Beata Krawczyk				
Lesson type and method of instruction	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						
Additional information:							
<ul style="list-style-type: none"> <li>materials to the lecture; e-learning</li> <li>Quiz; e-learning</li> </ul>							
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	10.0	27		
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_W51] Knows and understands, to an increased extent, selected aspects of chemistry and biochemistry constituting general knowledge in the field of biomedical engineering.	The student knows the morphology and chemical structure of bacteria and can use them in the identification of bacteria			[SW3] Assessment of knowledge contained in written work and projects		
	K7_K02	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		
Subject contents	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.						
Prerequisites and co-requisites	lack						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Quiz	60.0%			100.0%		

Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>• Abigail A. Salyers, Dixie D. Whitt Mikrobiologia, różnorodność, chorobotwórczość i środowisko; PWN</li> <li>• Color Atlas of Medical Bacteriology. Autorzy: Luis M. de la Maza, Marie T. Pezzlo, Cassiana E. Bittencourt, Ellena M. Peterson.</li> <li>• Brock Biology of Microorganisms, Global Edition - Michael Madigan, Kelly Bender, Daniel Buckley, W. Sattley, David Stahl</li> </ul>
	Supplementary literature	<p>Prescott's Microbiology. McGraw.Hill International Edition</p> <p><a href="https://open.oregonstate.education/generalmicrobiology/chapter/introduction-to-microbiology/">https://open.oregonstate.education/generalmicrobiology/chapter/introduction-to-microbiology/</a></p>
	eResources addresses	<p>Podstawowe</p> <p><a href="https://openstax.org/details/books/microbiology">https://openstax.org/details/books/microbiology</a> - Microbiology covers the scope and sequence requirements for a single-semester microbiology course for non-majors. The book presents the core concepts of microbiology with a focus on applications for careers in allied health. The pedagogical features of the text make the material interesting and accessible while maintaining the career-application focus and scientific rigor inherent in the subject matter. Microbiology's art program enhances students' understanding of concepts through clear and effective illustrations, diagrams, and photographs.</p> <p><a href="http://www.grsmu.by/files/file/university/cafedry/microbiologii-virysologii-immynologii/files/essential_microbiology.pdf">http://www.grsmu.by/files/file/university/cafedry/microbiologii-virysologii-immynologii/files/essential_microbiology.pdf</a> - Stuart Hogg, Essential Microbiology. The University of Glamorgan, UK</p> <p><a href="https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1015&amp;context=qb_oers">https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1015&amp;context=qb_oers</a> - Laboratory Exercises in Microbiology J. Petersen</p> <p>Uzupełniające</p> <p><a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=17434">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=17434</a> - lecture in PDF and additional link</p>
Example issues/ example questions/ tasks being completed	<p>Which sterilization method will we choose for oily substances:</p> <ol style="list-style-type: none"> <li>1. dry hot air</li> <li>2. an autoclave</li> <li>3. chemicals</li> </ol>	
Work placement	Not applicable	