



Subject card

Subject name and code	Microbiology II, PG_00054757						
Field of study	Biotechnology						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2026/2027		
Education level	first-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	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Laboratorium Biotechnologii i Mikrobiologii -> Department of Biotechnology and Microbiology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Beata Krawczyk					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	45.0	0.0	0.0	75
	E-learning hours included: 0.0						
	Additional information: Lecture - at the university Laboratory - empirical experience - at the university						
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	75	10.0	65.0	150		
Subject objectives	Getting to know the "golden standards" of microbiology lab in clinical and environmental diagnostics and phenotypic and genotypic variability of organisms.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U04	Knowledge of basic laboratory techniques and the ability to use them.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information		
	K6_W04	The student can use the knowledge acquired during the lecture and the laboratory.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	K6_K06	Ability to work in a team, and work in sterile conditions. He can find a solution to the problem. Can perform the assigned task together			[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills		

Subject contents	<p>Course content – lecture Laboratory: Aseptic technique, staining and observation of microorganisms; identification of unknown bacteria - morphological study and physiological characteristics (oxidation and fermentation tests, hydrolytic reactions, biochemical tests - the API 20E System; Enterotube II System); Gram-negative intestinal pathogen; the Streptococci - biochemical characteristics; the Staphylococci - isolation and Identification; Winogradsky column; Bacteriological examination of water.</p> <p>Lectures:</p> <p>Terms used in taxonomy. Microbiological diagnostics based on phenotypic features. Problems from the use of phenotypic methods in diagnostics. Non-cultivating and hard-cultivating microorganisms. Biofilms as organized bacterial communities. Modern systematics of bacteria. The concept of a bacterial species; Evolution of bacterial genomes 2. Characteristics of Archaea. Are there nanobacteria? 3. Relations between bacteria, between bacteria and invertebrates, bacteria and plants, and between bacteria and animals; 4. Pathogenesis; Virulence factors of bacteria and adaptation to environment. The role of toxins in pathogenesis. Structure and mechanism of action of exotoxins and endotoxins; Human commensal microbiota.</p>											
Prerequisites and co-requisites	Completion of the course "General microbiology"											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="448 665 794 703">Subject passing criteria</th> <th data-bbox="794 665 1141 703">Passing threshold</th> <th data-bbox="1141 665 1487 703">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 703 794 734">a passed exam</td> <td data-bbox="794 703 1141 734">60.0%</td> <td data-bbox="1141 703 1487 734">50.0%</td> </tr> <tr> <td data-bbox="448 734 794 770">reports</td> <td data-bbox="794 734 1141 770">60.0%</td> <td data-bbox="1141 734 1487 770">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	a passed exam	60.0%	50.0%	reports	60.0%	50.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. Krawczyk B. i in. Wybrane zagadnienia z mikrobiologii klinicznej i środowiskowej teoria i ćwiczenia laboratoryjne wyd. PG, 2019</p> <p>2. Eligia Szewczyk Diagnostyka Bakteriologiczna PWN, 2005</p> <p>3. Abigail A. Salyers, Dixie D. Whitt Mikrobiologia, różnorodność, chorobotwórczość i środowisko; PWN 2003</p> <p>4. Brown TA.. Genomy. PWN.2018</p> <p>5. Galdwin M, Trattler B. Mikrobiologia Kliniczna red. tł. S.Giedrys-Kalemba, 2010 wyd. Szczecin D.W. Publishing</p> <p>1. Brock T., Madigan MT, Martinko JM. Brock Biology of Microorganisms. Pearson International Edition</p>										
Example issues/ example questions/ tasks being completed	Issues to the laboratory in the student book: "Krawczyk B. et al. "Selected issues in clinical and environmental microbiology - theory and laboratory exercises" ed. PG, 2019											
Practical activities within the subject	Not applicable											

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