



Subject card

Subject name and code	Microbiology, PG_00036274						
Field of study	Green Technologies						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
Education level	first-cycle 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	4	ECTS credits			4.0		
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						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		5.0		35.0	100
Subject objectives	The aim of the course is to acquaint the student with the laboratory techniques used in the microbiological laboratory, to gain knowledge about the structure of micro-organisms, understanding of their function in the environment.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U04] capable of formulating and solving design tasks in the field of environmental technology to recognize their non-technical aspects, including environmental, economic and legal. Is capable of applying the principles of occupational health and safety. Is able to make initial assessment of engineering solutions and actions		He knows the principles of safe work in a microbiological laboratory. Students can use the methods and tools used in the microbiological laboratory Student acquired knowledge about conventional and molecular methods in microbiology.		[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[K6_W04] is aware of the importance of environmental protection and has a basic knowledge of chemical and biological threats to the environment, with particular emphasis on anthropogenic factors, has a basic knowledge of knowledge of the principles of sustainable development as well as national and European environmental management conditions.		He knows the influence of microorganisms on the environment of animal and human life and vice versa		[SW1] Assessment of factual knowledge		

Subject contents	<p>Lecture: Why study Microbiology. Classification and identification of microorganisms. Modern prokaryotic classification. Scope and history of Microbiology. Koch's postulates. Microscopy and Staining. Microbial nutrition, growth of microbial populations (phase) and culturing microorganisms (obtaining pure cultures, culture media, special culture techniques, preserving cultures. Measuring microbial growth. Controlling microbial growth, sterilization and disinfection. Molecular diagnostics in microbiology. General characteristics of Prokaryotic organisms (morphology, reproduction, endospores, arrangements of Prokaryotic cells. Cell structure and function. Microbial ecology. Host-Microbe relationships.</p> <p>Laboratory: Laboratory organization. Safety in handling microorganisms . Sterilization and disinfection. Cultivation of microorganisms (culture media and nutritional requirements of cell), Patterns of growth: colony morphology, growth patterns in broth, agar slant and agar deep-tube. Pure culture techniques (spread plate technique, streak plate technique, specific media). Cultivation of anaerobes. Microscopic techniques and bacteria staining (Gram staining). Environmental factors affecting microbial growth- temperature, pH, osmotic pressure, UV, chemical disinfectants.</p>											
Prerequisites and co-requisites	Preliminary demands not required.											
Assessment methods and criteria	<table border="1" data-bbox="451 562 1495 667"> <thead> <tr> <th data-bbox="451 562 798 595">Subject passing criteria</th> <th data-bbox="798 562 1141 595">Passing threshold</th> <th data-bbox="1141 562 1495 595">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 595 798 629">Written test - lecture</td> <td data-bbox="798 595 1141 629">52.0%</td> <td data-bbox="1141 595 1495 629">60.0%</td> </tr> <tr> <td data-bbox="451 629 798 667">test, report</td> <td data-bbox="798 629 1141 667">52.0%</td> <td data-bbox="1141 629 1495 667">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Written test - lecture	52.0%	60.0%	test, report	52.0%	40.0%
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Written test - lecture	52.0%	60.0%										
test, report	52.0%	40.0%										
Recommended reading	Basic literature	Mikrobiologia ogólna – podręcznik akademicki A.Brillowska-Dabrowska, L.Holec-Gąsior, M. Olszewski, K.Werbowy, J. Kur Wydawnictwo PG, 2009. Życie bakterii Władysław J.H. Kunicki - Goldfinger Wydawnictwo Naukowe PWN, 2008. Bakterie w biologii, biotechnologii i medycynie P. Singleton; Wydawnictwo Naukowe PWN, 2000										
	Supplementary literature	Mikrobiologia, różnorodność, chorobotwórczość i środowisko Abigail A. Salyers, Dixie D. Whitt PWN W-wa, 2006. Mikrobiologia ogólna H.G. Schlegel PWN, 2001. Krótkie wykłady Mikrobiologia J.Nicklin, K. Graeme-Cook wydanie: drugie, poprawione i unowocześnione, Wydawnictwo Naukowe PWN, 2007.										
	eResources addresses	Adresy na platformie eNauczanie:										
Example issues/ example questions/ tasks being completed												
Work placement	Not applicable											