University of Gdańsk

Subject card

Subject name and code	Microbiology, PG_00050803		
Field of study	Environmental Protection		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	undergraduate studies	Subject group	Obligatory subject group 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 polish
Semester of study	3	ECTS credits	3.0
Learning profile	academic	Assessment form	
Conducting unit	Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Marian Sęktas	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30	5.0	40.0	75

Subject objectives	1. Application and understanding of concepts from the field of microbiology in laboratory practice. 2. Understanding the morphology of a bacterial cell by staining and microscopic observation, as well as examining biochemical features. 3. The use of physical, chemical (sterylization) and biological factors to inhibit the growth and development of microorganisms. 4. The use of bacteriophages to lyse bacteria. 5. Testing for antibiotic resistance of bacteria. 6. Cell transformation and transduction

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚL3_K05] Identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development.	Understands the need for continuous professional education and updating knowledge about the impact of microorganisms on the environment and its protection; the ability to work individually and demonstrate initiative and independence in activities as well as effective cooperation in teamwork; selection and implementation of an action plan with previously defined priorities for its implementation; responsibility for the safety of one's own work and that of others and the workplace, as well as correctly applying the rules of conduct in emergency situations	[SK1] oral statement/conversation/ discussion [SK3] text preparation/written work [SK8] observation of student's independent or team work
[OŚL3_W06] Characterises levels of life organization, biodiversity and the interaction of organisms and the environment.	Knows the basics and characteristics of microbiological biodiversity and the interaction of microorganisms and the environment; bacterial analysis and identification techniques; basic principles of safety, ergonomics and hygiene when working with microorganisms;	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW3] text preparation/written work [SW5] implementation of a problem task
[OŚL3_U02] Plans, selects appropriate research and measuring equipment and devices, performs physicochemical measurements and experiments; analyses the results and draws conclusions based on them.	After selecting measurement equipment and instrumentation appropriate to the research task, a preliminary analysis of the composition of microorganisms isolated from specific environments (habitats) is performed.	[SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[OŚL3_W02] Characterises the relationships and relationships between various disciplines of natural sciences and science, uses knowledge of mathematics, physics, chemistry and biology in the description of basic concepts, concepts and principles in environmental protection.	Knows the connections and dependencies between various disciplines of natural and exact sciences, uses knowledge of mathematics, physics, chemistry and biology to describe basic concepts, concepts and principles in general microbiology, the importance of microorganisms in maintaining environmental balance and the need to study and analyze phenomena related to biology microorganisms;	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW3] text preparation/written work
[OŚL3_U07] Uses basic laboratory techniques, conducts field research and performs qualitative and quantitative analyses and draws conclusions on this basis for practical purposes.	Applies basic measurement and analytical techniques used in microbiology; using terminology in the field of microbiology and the nomenclature of individual disciplines related to it;	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[OŚL3_U09] Prepares in Polish/ English a short description of research, observation or problem task carried out during classes using appropriate scientific terminology.	Is able to prepare a protocol describing the materials used, methods and ways of detecting a given biological effect, including specific experimental data, using scientific terminology	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU8] observation of student's independent or team work

Subject contents

Exercise topics: culture media, characteristics of bacterial colonies, staining and observation of cells, knowledge of the structure of bacteria and knowledge of its basic physiological processes, knowledge of bacterial pathogens, knowledge of the basics of microorganism identification, ability to isolate and knowledge of methods of cultivating microorganisms from various environments, bacterial transformation and cell transduction bacteriophage, bacteriophage titration

Prerequisites and co-requisites

Prerequisites knowledge of basic concepts in general biology

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	51.0%	100.0%

Recommended reading	Basic literature	Kunicki-Goldfinger "Życie bakterii" (red. J. Baj., Z. Markiewicz), PWN, Warszawa 2005; "Biologia molekularna bakterii" (red. J. Baj, Z. Markiewicz), PWN, Warszawa 2007
	Supplementary literature	Jawetz E., Melnick J., Adelberg E., "Przegląd mikrobiologii lekarskiej", PZWL, Waszawa 1991; Kotełko K., Sedlaczek L., Lachowicz T.M., " Biologia bakterii", PWN, Warszawa 1984
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	A. Choose the correct answer regarding the transformation of *E. coli*:B. Which of the following cells does not contain a conjugative plasmid:C. Why is the transformation mixture inoculated onto a medium with antibiotic? D. The role of lactose present in McConkey's medium is:	
Work placement	Not applicable	

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