University of Gdańsk

Subject card

Subject name and code	Biology of bacteriophages, PG_00197697		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study 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	3	Language of instruction	English
Semester of study	6	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Intercollegiate Faculty of Biotechnology Office -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Gabriela Brzuska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	16.0	0.0	0.0	0.0	0.0	16

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	16	5.0	29.0	50

Subject objectives

The course aims to familiarize the student with the structure and functioning of bacterial viruses. The student will gain knowledge about the organization and structure of viruses. The student will become familiar with the techniques and tools used in bacteriophage research during the course. The student will learn the methodology used to study the morphology and function of bacteriophages, be able to indicate differences in the structure of various types of bacteriophages and indicate the features that differentiate individual types of viruses and their common features.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHL3_W02] The graduate knows and understands selected processes at the cell, tissue and organism level, important from the biological point of view	The student understands the molecular basis of the interactions of bacteria and bacteriophages in the natural environment and in the laboratory	[SW4] test/exam - oral or written
[BIOTECHL3_U02] The graduate is able to plan and organise work effectively, independently or as part of a team, in particular work in a laboratory	The student is able to plan his/her own work and that of a team of students during classes.	[SU4] test/exam - oral or written
[BIOTECHL3_U06] The graduate is able to prepare a targeted written study in Polish and/or English, covering detailed issues in the field of biotechnology, using scientific language, including specialist terminology and conceptual apparatus appropriate for biotechnology	The student knows the scientific language and scientific concepts within the scope of the subject	[SU4] test/exam - oral or written
[BIOTECHL3_U05] The graduate is able to use the English language in the scope enabling the understanding of statements and reading with comprehension of literature and simple scientific studies in the fields of science and scientific disciplines relevant to biotechnology; prepare a short written study and an oral presentation in English on specific issues of biotechnology	The student knows English to a degree that allows him/her to understand scientific texts in the field of the subject.	[SU4] test/exam - oral or written

Subject contents

Definition of bacteriophages, first experiments and history of research on bacterial viruses (bacteriophages), structure of bacteriophages, morphology of capsids, organization of nucleic acids - bacteriophage genomes, life cycles, prophages (viral sequences in bacterial genomes), lysogenic conversion, isolation of bacteriophages from the environment, multiplication of bacteriophages in cultures of host bacteria, plaque counting as a method of estimating the number of bacteriophages in a given environment, searching for viral sequences in bacterial genomes - bioinformatics bases, programs, storage of bacteriophages, identification and characterization of bacteriophages - phenotyping methods, influence of the environment on bacteriophage stability, mechanism of bacteriophage adsorption to bacteria, "one-step growth" experiment, study of the host range of bacteriophages, isolation of genetic material from bacteriophages and its analysis, phylogenetic methods of bacteriophage research, biological control of animal and plant infections using bacteriophages

Prerequisites and co-requisites

completed basic microbiology course

Assessment methods and criteria

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

Recommended reading

Basic literature	Mikrobiologia J. Baj (red. nauk), Wydawnictwo Naukowe PWN SA, Warszawa 2018 (+ wydania późniejsze) Mikrobiologia P. Murray, M. Pfaller, K. Rosenthal, Wydawnictwo Naukowe PWN SA, Warszawa 2020 Bacteriophages Methods and Protocols (vol. 1-4) M. Clokie, A. Kropinski, Springer 2019 Bacteriophage Biology, Technology and Therapy D. Harper, S. Abedon, B. Burrowes, M. McConville Springer 2021
Supplementary literature	Scientific publications in Polish and English on the topic of the classes Materials provided by the instructor during the classes
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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