University of Gdańsk

Subject card

Subject name and code	Biotechnology in medicine - Human pathogens and diagnostics Methodology(M05_B2), PG_00196944						
Field of study	Biotechnology						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
Education level	Bachelor's 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	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	4.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	UG Institute of Biotechnology -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Mariusz Grinholc, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		10.0	45.0		100
Subject objectives	The block aims to familiarise students with selected aspects of laboratory diagnostics as well as the practical dimension of microbiological diagnostics and its limitations and prospects created by modern molecular biology techniques. Students will be introduced to selected techniques and research tools necessary for microbiological diagnosis with particular emphasis on methods of isolation, selection and identification of microorganisms, and during laboratory classes they will acquire advanced skills in the use of selected techniques and organisation of laboratory work.						

<table>
<tr><td>Learning outcomes</td><td>
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<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[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</td><td>The student prepares for classes based on information acquired independently and the exercise script. Effectively plans and organizes laboratory work and is ready to conduct experiments as part of a team.</td><td>[SU4] test/exam - oral or written
[SU6] demonstration of practical skills
[SU8] observation of student's independent or team work</td></tr>
<tr><td>[BIOTECHL3_U01] The graduate possesses practical skills in performing laboratory procedures, documenting results, and applying techniques necessary in biotechnology, including methods of isolation, modification, selection, and analysis of organisms, tissues, cells, and molecules; has the ability to operate advanced laboratory.</td><td>The student is able to perform standard microbiological procedures, including the isolation, identification and cultivation of microorganisms, is able to safely operate laboratory equipment used in microbiological diagnostics, and is able to accurately document test results in accordance with the requirements of scientific and diagnostic laboratories.</td><td>[SU4] test/exam - oral or written
[SU6] demonstration of practical skills
[SU8] observation of student's independent or team work</td></tr>
<tr><td>[BIOTECHL3_W07] The graduate has advanced knowledge of the rules of operation and the possibilities of using research techniques and tools used in biotechnology.</td><td>The student is able to discuss methods of isolation, identification and characterization of microorganisms, understanding the principles of operation of diagnostic techniques and their importance for biotechnology and medicine.</td><td>[SW4] test/exam - oral or written</td></tr>
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<tr><td>Subject contents</td><td>M1. Microbiological diagnosis and molecular identification of human diseases associated with pathogen infection (knowledge of techniques used in routine as well as non-routine microbiological diagnosis, i.e. classical microbiology and molecular biology methods used in the diagnosis and epidemiology of nosocomial infections; knowledge of the process of identifying the different groups of microorganisms and the ability to working in sterile conditions and the ability to self-identify microorganisms)</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of the content of Modules 01-04</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Content M1</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Mikrobiologia - Jadwiga Baj (red. nauk.), Wydawnictwo Naukowe PWN SA, Warszawa 2018.
Źródła literaturowe podane w materiałach wykładowych
Grinholc M. Microbiological Diagnostics Labs Course Book</td></tr>
<tr><td>Supplementary literature</td><td>Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Edited by Burtis C.A., Ashwood E.R., Bruns D.E. wyd. Elsevier Saunders
Prescotts Microbiology J. M. Willey, L. M. Sherwood, C. J. Woolverton, 8th edition, McGraw-Hill, 2011
Źródła literaturowe dostępne w internetowych bazach danych (PubMed).
Bailey & Scott Diagnostic Microbiology (Elsevier, 13th edition, 2014)
The cyanobacteria Molecular biology, genomics and evolution
Bergeys Manual of systematic Bacteriology
Eligia M. Szewczyk. Diagnostyka Mikrobiologiczna (PWN, 2013, wyd. 2)
Zdzisław Markiewicz, Zbigniew A. Kwiatkowski. Bakterie, antybiotyki, lekooporność. (PWN, 2018)
Piekarowicz A. (2012): Podstawy wirusologii molekularnej</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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