University of Gdańsk

Subject card

Subject name and code	Biotechnology in medicine - Human pathogens and diagnostics Methodology(M05_B2), PG_00197649		
Field of study	Biotechnology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
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 the basics 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 the basic 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 basic skills in the use of selected techniques and organisation of laboratory work.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHL3_W07] The graduate has advanced knowlegde of the rules of operation and the possibilities of using research techniques and tools used in biotechnology.	Has knowledge of basic research techniques and tools used in biotechnology	[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	Effectively plans and organises work independently or as part of a team, in particular laboratory work	[SU4] test/exam - oral or written [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[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.	Possesses basic skills necessary for laboratory work; can document activities and results; in laboratory work under the guidance of a supervisor applies basic techniques and research tools necessary in biotechnology, with particular emphasis on methods of isolation, modification, selection and analysis of organisms, tissues, cells and molecules; has the ability to operate basic laboratory equipment	[SU4] test/exam - oral or written [SU6] demonstration of practical skills [SU8] observation of student's independent or team work

<table>
<tr><td>Subject contents</td><td colspan="3">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 colspan="3">Knowledge of the content of Modules 01-04</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><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></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">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 colspan="2">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 colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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