University of Gdańsk

Subject card

Subject name and code	Biotechnology in medicine - Human pathogens and diagnostics - Fundaments (M05_B2), PG_00196943		
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	3.0
Learning profile	academic	Assessment form	exam
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	38.0	0.0	0.0	0.0	0.0	38

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	38	5.0	32.0	75

Subject objectives

Curriculum block is designed to familiarise students with bacterial and viral human pathogens and the molecular aspects of the infections they cause. In addition, it aims to familiarise students with the principles of laboratory diagnostics as well as the practical dimension of microbiological diagnostics and its limitations and prospects offered by modern molecular biology techniques. Students will become familiar with the techniques and research tools necessary for microbiological diagnosis with particular emphasis on methods of isolation, selection and identification of microorganisms.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHL3_W05] The graduate understands at an advanced level the mechanisms of vital function disorders and knows the causes, symptoms and methods of assessing selected disorders and pathological changes in the field of pathophysiology, biochemical disorders, and neoplasia; proposes advanced methods of assessing these disorders in the field of medical biotechnology and molecular diagnostics.	Has knowledge and understanding of selected mechanisms of the formation of disorders of vital functions; knows the causes and symptoms of selected disorders and lesions in the field of pathophysiology, biochemical disorders, tumorigenesis; knows the methods of evaluation of these disorders in the field of medical biotechnology and molecular diagnostics	[SW4] test/exam - oral or written
[BIOTECHL3_W07] The graduate has advanced knowledge of the rules of operation and the possibilities of using research techniques and tools used in biotechnology.	The student(s) will gain an advanced understanding of the essential techniques and research tools employed in microbiological diagnostics, encompassing methods for isolating, selecting, and identifying microorganisms.	[SW4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>F1. Molecular mechanisms of human body infections

F2. Laboratory diagnostics

F3. Molecular identification of human diseases associated with pathogen infection

F4. Diversity of the viral world and the relevance of evolutionary processes in it to human pathology</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>Comprehensive integrating examination</td><td>50.0%</td><td>40.0%</td></tr>
<tr><td>F1-F4</td><td>51.0%</td><td>60.0%</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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