

Subject card

Subject name and code	Molecular diagnostics (lab.), PG_00153606						
Field of study	Biotechnology						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
Education level	postgraduate 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	1	Language of instruction			Polish If there is an ERASMUS student in the group, the language is English.		
Semester of study	1	ECTS credits			2.0		
Learning profile	academic	Assessment form					
Conducting unit	Zakład Fotobiologii i Diagnostyki Molekularnej -> Instytut Biotechnologii UG -> Intercollegiate Faculty of Biotechnology UG-MUG						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Magda Rybicka-Misiejko				
	Teachers		dr Magda Rybicka-Misiejko				
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						
	Additional information: The first and last exercises are online						
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		15.0	50
Subject objectives	To familiarize students with the techniques and tools used in DNA/RNA analysis. During the course, the student will be able to plan an experiment, i.e. organize space and work time. The student will learn to perform experiments independently and to document the steps performed during the experiments and the results obtained. The student will acquire the ability to use complex research techniques (e.g. real-time qPCR), and the ability to operate equipment used for the detection of genetic material and data analysis (Light Cycler, Nanodrop).						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOTECHMU2_U02] The graduate is able to collect and interpret empirical data; use statistical methods and IT tools in data analysis; formulate conclusions based on empirical data	Upon course completion, students can independently collect, analyze, and interpret empirical data using appropriate statistical methods and IT tools, and formulate conclusions based on the results.	[SU2] presentation/project/paper/report [SU3] text preparation/written work
	[BIOTECHMU2_K05] The graduate is willing to adhere to the principles of work safety, in particular laboratory work; be responsible for his/her own safety and that of others; behave in an appropriate manner in an emergency	<p>Upon completion of the course, the student will:</p> <p>Comply with occupational health and safety regulations with special emphasis on the laboratory environment, demonstrate responsibility for the safety of self and co-workers, and be able to respond appropriately to hazardous situations.</p> <p>auto_awesome Język oryginału: angielski 283 / 5 000</p> <p>Upon completion of the course, the student will</p> <p>Comply with occupational health and safety regulations with special emphasis on the laboratory environment, demonstrate responsibility for the safety of self and co-workers, and be able to respond appropriately to hazardous situations.</p>	[SK4] test/exam - oral or written [SK5] implementation of a problem task [SK8] observation of student's independent or team work
	[BIOTECHMU2_U01] The graduate is able to do laboratory work; plan and carry out an experiment; document activities and results; use complex techniques and research tools under the supervision of a tutor in laboratory work; operate laboratory equipment; apply the principles of occupational health and safety; understand the dangers of working in a laboratory	<p>Upon completion of the course, the student will:</p> <ol style="list-style-type: none"> 1. Demonstrate the skills necessary to work effectively in a laboratory environment. 2. Independently plan and conduct scientific experiments, taking into account available resources and time constraints. 3. Reliably document the progress of experiments and the results obtained, using appropriate methods and tools. 4. Uses advanced techniques and research tools in laboratory work under the supervision of a supervisor. 5. Efficiently operates specialized laboratory equipment and understands the principles of its operation and maintenance. 6. Adheres to health and safety rules in the laboratory, demonstrating responsibility for self and co-workers. 7. Identifies, understands, and responds appropriately to potential hazards associated with working in a laboratory environment. 	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU3] text preparation/written work [SU5] implementation of a problem task [SU6] demonstration of practical skills

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Subject contents	The laboratory curriculum includes learning molecular biology techniques used in analysis-based diagnostics of genetic material (human, microbiological). In addition, laboratory exercises include knowledge of assessing the quality of material, genetic material, and its suitability for specific analyses. An important element of the exercises is learning to work under sterile conditions and the ability to organize workspace and time.																	
Prerequisites and co-requisites	<p>Formal requirements</p> <p>Preferred knowledge, skills and competences acquired during laboratory exercises in General Microbiology, Molecular Biology</p>																	
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. Treści udostępnione przez prowadzącego wykłady Diagnostyka molekularna.</p> <p>2. Słomski, R. (red.) Analiza DNA. Praktyka. Poznań: Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu, 2014</p> <p>3. Bał J. Genetyka medyczna i Molekularna. PWN Warszawa 2017</p> <p>4. Lewandowska Ronnegren A. Techniki laboratoryjne w Biologii Molekularnej. MedPh, Wrocław 2018</p> <p>Buckingham, M.L., Flaws, L.: Molecular diagnostics: Fundamentals, Methods and Clinical Applications. 2019</p> <p>Adresy na platformie eNauczanie:</p>																
Example issues/ example questions/ tasks being completed																		
Work placement	Not applicable																	

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