


**KAPITAŁ LUDZKI**  
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez  
 Unię Europejską w ramach  
 Europejskiego Funduszu  
 Społecznego

**UNIA EUROPEJSKA**  
 EUROPEJSKI  
 FUNDUSZ SPOŁECZNY


<b>Course title</b>		<b>ECTS code</b>	
Molecular diagnostics (lab.)		13.1.0541	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	<b>second tier studies (MA)</b>
Intercollegiate Faculty of Biotechnology UG-MUG	Biotechnology	<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
<b>Teaching staff</b>			
dr hab. Joanna Nakonieczna, profesor uczelni; mgr Michał Pierański; mgr Klaudia Michalska; dr Magda Rybicka-Misiejko; dr Agnieszka Bernat-Wójtowska			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		2	
Laboratory classes			
<b>The realization of activities</b>			
classroom instruction			
<b>Number of hours</b>			
Laboratory classes: 30 hours			
<b>The academic cycle</b>			
2021/2022 winter semester			
<b>Type of course</b>		<b>Language of instruction</b>	
obligatory		polish	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
conducting experiments		<b>Final evaluation</b>	
		Graded credit	
		<b>Assessment methods</b>	
		<ul style="list-style-type: none"> <li>- ssignment work – conducting research and presenting results</li> <li>- assignment work – completing a specific practical assignment</li> <li>- graded course credit based on individual grades obtained during the semester</li> </ul>	
		<b>The basic criteria for evaluation</b>	
		<p>The evaluation will be based on performance of the assigned tasks. The examination results must be prepared by the student as a written report (the first constituent grade). The student will obtain the next constituent grade for a particular practical assignment, performed properly (ability to stick to the rules of health and safety; ability to work with potentially contagious material; performing a correct analysis of genetic material by means of methods presented during classes; ways of dealing with medical waste) The next constituent grade will be based on at least 3 colloquia checking the student's theoretical knowledge necessary to perform laboratory tasks properly. The colloquia cover theoretical issues concerning the laboratory task planned for the particular day. Another constituent grade is student's activity and his/her ability to organize a workplace assessed through observation during classes.</p> <p>The final grade for the laboratory classes is an arythmetic average of the constituent grades.</p>	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			

<b>A. Formal requirements</b> <b>B. Prerequisites</b> Preferred - knowledge, skills and competence obtained during laboratory classes in General Biology, Molecular Biology	
<b>Aims of education</b> The aim of the laboratory is to acquaint students with the practical aspect of molecular diagnostics, in particular with the techniques and tools used in the analysis of genetic material. The student will get to know limitations and the choice of techniques used in the analysis of genetic material. During the course the student will: K_U01 – acquire abilities indispensable for working in a molecular diagnostics laboratory, an ability to plan an experiment, including the planning of place and time of work. The student will acquire an ability to conduct an experiment on his own and will get to know the method and the necessity of documenting the steps performed during the experiment, as well as of the acquired results. During the course the student will acquire an ability to apply complex research techniques (PCR with product detection in real time; genotyping techniques, ddPCR) as well as to use the equipment applied in the detection of genetic material and data analysis (Light Cycler, Quantity One, Nanodrop- type equipment). K_U05 – acquire an ability to collect results obtained in the self-performed experiments, moreover, to apply selected statistical methods to obtain the final result, on whose basis the student will be able to formulate final conclusions and eventually plan further analyses. K_K02 – acquire the attitudes indispensable in teamwork, mutual planning, and subsequently, in the mutual realization of laboratory tasks. During the classes the student will acquire competency to prepare theoretical reviews concerning the subject of particular experiments. K_K05 – acquire competency to work in accordance with the rules of health and safety in a diagnostic laboratory with the potentially contagious material, he will be able to apply safety rules in a diagnostic lab. Moreover, he will acquire an ability to react properly in a hazardous situation.	
<b>Course contents</b> The laboratory course involves learning about molecular biology techniques used in diagnostics based on the analysis of genetic material (human, microbiological). Moreover, laboratory classes cover the ways of assessing the quality of genetic material, its usefulness in performing certain analyses. An important element of the course is learning how to work in sterile conditions and the ability of individual organization of the place and time of work.	
<b>Bibliography of literature</b> A. Bibliography required to pass the exam: A.1. Instructions prepared by and provided by the teacher during the course A.2. Self-studied by the student based on bibliographic sources available in the Internet data bases (e.g. PubMed) B. Additional literature Analiza DNA. Teoria i praktyka. Pod redakcją Ryszarda Słomskiego. Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu, Poznań. Badania molekularne i cytogenetyczne w medycynie. Elementy genetyki klinicznej. Pod redakcją Jerzego Bala, Springer PWN. Biologia molekularna w medycynie. Pod redakcją Jerzego Bala, Wydawnictwo Naukowe PWN, Warszawa.	
<b>The learning outcomes (for the field of study and specialization)</b>  K_U01 K_U05 K_K02 K_K05	<b>Knowledge</b>
	<b>Skills</b>  K_U01 Has the skills indispensable for lab work; is able to plan conducting an experiment and carry it out, is able to document on his own operations and results; in lab work, under the supervision of the tutor, uses complex techniques and research tools, is able to use lab equipment. K_U05 Collects and interprets empirical data, in data analysis uses statistical methods and informatics tools, draws conclusions on the basis of empirical data
	<b>Social competence</b>  K_K02 Has an ability to work in a team, in particular, while performing laboratory work or preparing theoretical reviews within the field of biotechnology and related scientific areas and disciplines K_K05 Is aware of the significance of rules of safety at work, particularly in a laboratory; applies the rules of safety at work; is responsible for his/her own safety and the safety of others; can react properly in hazardous situations
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