


**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 (lecture)		13.1.0605	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	second tier studies (MA)
Intercollegiate Faculty of Biotechnology UG-MUG	Biotechnology	<b>form</b>	full-time
		<b>specjalty</b>	all
		<b>specialization</b>	all
<b>Teaching staff</b>			
prof. dr hab. Krzysztof Bielawski; dr hab. Joanna Nakonieczna, profesor uczelni; dr Agnieszka Bernat-Wójtowska; dr Magda Rybicka-Misiejko			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		3	
Lecture			
<b>The realization of activities</b>			
classroom instruction			
<b>Number of hours</b>			
Lecture: 30 hours			
<b>The academic cycle</b>			
2021/2022 winter semester			
<b>Type of course</b>		<b>Language of instruction</b>	
obligatory		english	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
<ul style="list-style-type: none"> <li>- multimedia-based lecture</li> <li>- multimedia-supported lectures</li> </ul>		<b>Final evaluation</b>	
		Examination	
		<b>Assessment methods</b>	
		<ul style="list-style-type: none"> <li>- written exam with open questions</li> <li>- written exam (test)</li> </ul>	
		<b>The basic criteria for evaluation</b>	
Exam covers contents shown in the box 'Course contents'. Exam - test - type questions and open questions. The assessment in accordance with percentage index from the Rules and Regulations for Studies at the UG. Final exam grade will be the average obtained in particular areas of knowledge. To pass each learning outcome, 51% of correct answers covering a particular learning outcome is required. Exam questions refer to all outcomes shown in the syllabus in the box 'Learning outcomes'			
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
Completion of laboratory classes in Molecular Diagnostics			
<b>B. Prerequisites</b>			
Preferably, completion of the following courses: Methodology of Genetic Engineering, Methodology of Molecular Biology			
<b>Aims of education</b>			
The aim of the course is to acquaint the students with the basics and with the practical aspect of techniques used in molecular diagnostics in research laboratories as well as laboratories carrying out routine analyses based on the examination of nucleic acids. During the course the			

principles of some methods will be presented, supported with examples of specific analyses.

During the classes the student will:

(K\_W01) acquire knowledge concerning the complex biological phenomena connected with the analysis of nucleic acids as analytical material and will get to know the significance of such analyses for biotechnology, especially medical biotechnology. The student will acquire knowledge about contemporary molecular diagnostics, modern technologies applied in molecular diagnostics, limitations connected with working with clinical material and its interactions with other domains and disciplines of science, e.g. molecular biology, genetic engineering, nanotechnology

(K\_W02) – acquire the deepened knowledge about advanced techniques and tools of molecular biology and genetic engineering and their application in health protection

(K\_W04) – will get to know the basic rules of health and safety of working in a diagnostic laboratory; understand the hazards of working with clinical material, potentially contagious, get to know the hazards connected with conducting laboratory examinations and manipulating DNA/RNA material

### Course contents

The lecture covers the issue of exploitation of techniques based on nucleic acids in order to characterize and identify pathogens of contagious diseases, genetically conditioned diseases, neoplasms. Moreover, the lecture contains information about contemporary trends in the development of molecular diagnostics, its links with other fields of science, mainly medicine, molecular biology. The lectures stress the practical aspect of molecular diagnostics in diagnosing and treating a particular patient (so-called personalized medicine). During the lecture there is presented information about commercial diagnostic methods, equipment platforms and technological solutions, available on the market.

### Bibliography of literature

A. Bibliography required to pass the exam:

A.1. Used during the course

A.2. Self-studied by the student

B. Additional literature

B.1. Analiza DNA. Teoria i praktyka. Pod redakcją Ryszarda Słomskiego. Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu, Poznań.

B.2. Badania molekularne i cytogenetyczne w medycynie. Elementy genetyki klinicznej. Pod redakcją Jerzego Bala, Springer PWN.

B.3. Biologia molekularna w medycynie. Pod redakcją Jerzego Bala, Wydawnictwo Naukowe PWN, Warszawa.

B.4. Bibliographic sources available in the Internet data bases (e.g. PubMed)

### The learning outcomes (for the field of study and specialization)

K\_W01

K\_W02

K\_W04

### Knowledge

K\_W01 Understands complex biological phenomena on the molecular level, knows their significance for biotechnology and their relationships with other areas and disciplines of science

K\_W02 Possesses a deepened knowledge in the field of related scientific areas and disciplines allowing him/her to see connections and dependencies in nature, in particular those essential for biotechnology

K\_W04 Knows the basic rules of safety at work, understands the hazards of lab work, knows the hazards connected with conducting lab research, knows the hazards of working with pathogenic organisms and GMO

### Skills

### Social competence

### Contact

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