

Subject card

Subject name and code	Contemporary aspects of laboratory diagnostics in forensic medicine, PG_00153617						
Field of study	Biotechnology						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Master's studies	Subject group			Obligatory subject group in the field of study Optional subject group 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	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Intercollegiate Faculty of Biotechnology UG-MUG -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Andrea Lipińska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	0.0	30.0	30
	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	30		5.0		15.0	50
Subject objectives	In the course of the course the student will: deepen knowledge of biochemical and genetic phenomena with practical applications in laboratory diagnostics in forensic medicine, learn their significance in toxicological and genetic research for the needs of justice and law enforcement agencies; will acquire in-depth knowledge of methods of detection and quantification of psychoactive substances and drugs in biological material, identification of biological traces and genetic identification of individuals and determination of parentage, including paternity.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOTECHMU2_W03] The graduate has in-depth, specialized knowledge of therapy and diagnostic methods of human diseases, including the mechanisms of action of selected drugs, immunotherapy, cellular and gene therapy, understanding the ethical, legal and social dilemmas involved and being able to evaluate them from the perspective of the patient's well-being and the public interest.	The student characterizes contemporary laboratory diagnostic methods used in forensic medicine, including molecular biology techniques, genetic analysis, and toxicological testing, discussing their importance in the analysis of biological material for forensic and criminal investigations. The student identifies the ethical, legal, and social dilemmas associated with the use of advanced diagnostic methods and genetic testing in forensic medicine.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[BIOTECHMU2_U04] The graduate possesses the ability to proficiently use scientific information, including English, regarding biotechnology; critically analyses and selects information; uses electronic sources; has the ability to use appropriate databases.	Students search for and utilize scientific information regarding laboratory diagnostic methods used in forensic medicine, utilizing electronic databases and specialized scientific literature. They analyze and critically evaluate scientific publications, including those in English, regarding modern diagnostic methods used in forensic medicine.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
	[BIOTECHMU2_K01] The graduate consciously combines knowledge acquired in previous stages of education with knowledge acquired on an ongoing basis to solve problems in the field of biotechnology; consciously deepens and updates knowledge and improves qualifications related to biotechnology in the field of exact and natural sciences and medical and health sciences.	The student integrates knowledge of biology, biotechnology, genetics, and laboratory medicine to interpret issues related to laboratory diagnostics used in forensic medicine. He or she recognizes the need for ongoing updating of knowledge regarding modern diagnostic methods and technologies used in forensic medicine and their application in biotechnological practice.	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written
	[BIOTECHMU2_W01] The graduate has in-depth knowledge of complex biological phenomena at the molecular level and knows their importance for biotechnology, is able to analyze them in an interdisciplinary approach and assess their ethical, social and environmental implications.	The student characterizes the molecular and cellular mechanisms of biological processes used in laboratory diagnostics and forensic medicine. She/he analyzes complex biological phenomena from an interdisciplinary perspective, integrating knowledge from biology, biotechnology, medicine, and the natural sciences in the context of forensic diagnostics. She/he assesses the ethical, social, and environmental implications of using modern diagnostic methods and biotechnological technologies in forensic medicine.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
Subject contents	The syllabus includes topics in contemporary laboratory methods in forensic medicine, in particular: <ul style="list-style-type: none"> - aspects of forensic toxicology - techniques of toxicological analysis - knowledge of the most common accidental, suicidal and criminal poisonings - past and present issues of psychoactive substances - legal conditions concerning drug use - issues related to ethanol alternatives - retrospective and prospective calculation of blood alcohol concentrations - workflows for the identification of biological traces - genetic identification of gender and human appearance markers - steps in DNA testing in personal identification and establishment of paternity - biostatistical calculations in forensic genetics and their relevance to forensic medical opinions - examples of the use of DNA testing in forensic genetics 		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Attendance	51.0%	20.0%
	Programme content	51.0%	80.0%

Recommended reading	Basic literature	<p>1. K. Rębała (red.), Contemporary aspects of laboratory diagnostics in forensic medicine, NCBiR, Gdańsk 2015.</p> <p>2. S. Raszeja, W. Nasiłowski, J. Makarewicz, Medycyna sądowa, Podręcznik dla studentów, PZWL, Warszawa 1990.</p> <p>3. Z. Szczerkowska, Badania biologiczne w sądowym ustalaniu ojcostwa, Instytut Ekspertyz Sądowych, Kraków 1998.</p> <p>4. Z. Szczerkowska, R. Pawłowski, Podstawy genetyki sądowej, Akademia Medyczna w Gdańsku, Gdańsk 2002. Kraków 2002. Warszawa 2011.</p> <p>7. Z. Marek, M. Kłys, Opiniowanie sądowo-lekarskie i toksykologiczne, Kantor Wydawniczy Zakamycze, Kraków 1998.</p> <p>8. W. Seńczuk (red.), Toksykologia współczesna, PZWL, Warszawa 2006.</p> <p>9. J. K. Piotrowski (red.), Podstawy toksykologii, WNT, Warszawa 2008.</p>
	Supplementary literature	None
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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