

Subject card

Subject name and code	Physical methods of investigating traces of crimes - lecture, PG_00210056						
Field of study	Criminology						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Master's studies		Subject group		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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Faculty of Law and Administration -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Aneta Lewkowicz, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	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		0.0		20.0	50
Subject objectives	A presentation of common methods for examining forensic evidence. A presentation of methods for identifying, preserving, and conducting quantitative and qualitative analyses of forensic evidence at the crime scene and in the forensic laboratory. Learning to interpret the results obtained and draw conclusions from them with a view to their usefulness in commissioning a forensic expert report and in analysing the findings contained therein. Preparing students to make much wider use of contemporary advances and applications of physics and related sciences in legal forensic procedures.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[KRYMMU2_W02] Has an in-depth knowledge of the nature of natural sciences related to the studied major, their place in the system of sciences and their mutual relations	demonstrates advanced knowledge of fundamental and specific issues in the field of legal sciences understands interdisciplinary relationships, in particular the impact of empirical research on the development of criminal law and criminalistics is familiar with current research trends in criminalistics and forensic sciences	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task
	[KRYMMU2_W05] Has an in-depth knowledge of research methods and tools, including techniques of data collection, analysis and interpretation, specific to criminology and forensic science.	Student: is able to identify and define research problems related to crime applies research methods and techniques appropriate for criminology and criminalistics is able to interpret empirical data on crime is able to integrate interdisciplinary knowledge.	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task
	[KRYMMU2_K05] Is able to responsibly perform professional roles while taking into account changing social needs, contribute to the development and maintenance of professional achievements and ethos, as well as observe and develop the principles of professional ethics and promote compliance with these principles.	is able to select and apply appropriate forensic techniques for the detection, securing and preliminary analysis of evidence, e.g. dactyloscopic and biological evidence is able to analyse evidence using basic identification and comparison methods used in forensics	[SK1] oral statement/conversation/discussion

Subject contents	To introduce the basic methodology used by an expert in physical and chemical testing. To provide the student with information on how to interpret test results, giving standards for common testing methods used in a forensic laboratory. Forensic Expertise. To present the issues related to evidence- sample to be tested as environmental material (contaminated and difficult to isolate from the substrate). Basic methods used in structural-spectroscopic analysis of samples (evidence): SEM - Scanning Electron Microscope UV/VIS spectrophotometry Spectrofluorimetry. MF – Stereo microscope with fluorescence Raman spectroscopy The application of the above investigative methods to the analysis of evidence.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	the oral exam	51.0%	100.0%

Recommended reading	Basic literature	1. D. Halliday, R. Resnick, J. Walker, "Podstawy Fizyki", Wydawnictwo Naukowe PWN, Warszawa 2008; 2. P.W. Atkins, Chemia fizyczna, Wydawnictwo Naukowe PWN, Warszawa 2007; 3. M. Kulicki, V. Kwiatkowska - Wójcikiewicz, L. Stępka - Kryminalistyka. Wybrane zagadnienia teorii praktyki śledczo - sądowej", Wydawnictwo Uniwersytetu Mikołaja Kopernika, 2009; 4. J. Widacki - Kryminalistyka" , Wydawnictwo C.H. Beck, 2012; 5. W. Szczepaniak - Metody instrumentalne w analizie chemicznej", PWN, Warszawa 1994; 6. J. Zięba - Palus - Ekspertyza fizykochemiczna. Ekspertyza sądowa, Zagadnienia wybrane" pod redakcją J. Wójcikiewicza, Wolters Kluwer, Warszawa 2007; 7. A. Filewicz, W. Krawczyk, A. Musiał - Ślady fizykochemiczne. Ślady kryminalistyczne. Ujawnianie , zabezpieczenie, wykorzystanie" pod redakcją M. Goca i J. Moszczyńskiego , Diffin, Warszawa 2007 8. Ekspertyza Sądowa, pod red. Józefa Wójcikiewicza, Kantor Wydawniczy Zakamycze, 2022.
	Supplementary literature	A. Barbacki - Mikroskopia elektronowa", Wydawnictwo Politechniki Poznańskiej, Poznań 2007; J. Sadlej - "Spektroskopia molekularna" , Wydawnictwo Naukowo - Techniczne, Warszawa 2002; Powszechne metody fizykochemiczne stosowane w laboratoriach kryminalistycznych. Omówienie różnego rodzaju ekspertyz sądowych.
	eResources addresses	

Example issues/ example questions/ tasks being completed	1. Physics in Forensic Science. 2. Forensic expert. 3. Forensic analysis. 4. Analysis of evidence using research methods in the fields of molecular spectroscopy and optical and electron microscopy: UV/VIS spectrophotometry Spectrofluorimetry. MF - Stereoscopic microscope with fluorescence Raman spectroscopy Application of the above research methods to the analysis of evidence.
Work placement	Not applicable

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