University of Gdańsk

Subject card

Subject name and code	Mechanoscopy and physical methods of examining traces - laboratory classes, PG_00132514		
Field of study	Criminology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	Master's studies	Subject group	Obligatory subject group in the field of study
Mode of study	part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	1.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Law and Administration -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Anna Synak	
	Teachers	mgr Emilia Gruszczyńska	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	10.0	0.0	0.0	10
	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	10	0.0	15.0	25

Subject objectives	Familiarization with the aparatures used in modern forensics to identify traces, mainly in the investigative technique of mechanoscopy. Familiarization with its possibilities and limitations from the perspective of its use in the preparation of an expert opinion. Acquisition of basic skills a) performing research based on microscopic and X-ray techniques b) preliminary analysis and interpretation of measurement data c) a their presentation and assessment of usefulness. Learning basic physical phenomena and processes necessary to understand the discussed research methods and the equipment used.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[KRYMMU2_UW06] He/she is able to propose solutions of concrete problems and carry out procedures connected with solutions in this respect	Student is able to 1. match a specific research method to a given evidence, 2. match a specific research method to a specific need (e.g. in an expert opinion assignment). 3. has the ability to prepare various materials and present results appropriately.	[SU1] oral statement/conversation/ discussion
	[KRYMMU2_KR08] He/ she is aware of the level of own knowledge and skills, and understands the need for lifelong learning	1. The student knows the limitations of his/her own knowledge of physics (its laws, achievements and applications); 2. The student understands the need for further education and training of skills; 3. The student appreciates the development made in forensics thanks to its connection with the sciences sciences and scientific analysis of crime evidence; 4. The student is aware of the helpful role of physicochemical analysis of traces in identifying perpetrators of crimes; 5. The student is aware of the prospects for the development of forensics along with the development of the exact sciences.	[SK1] oral statement/conversation/ discussion
	[KRYMMU2_KK01] The graduate is aware of the level of his/her knowledge and skills, and also understands the need of lifelong learning	1. The student knows the limitations of his/her own knowledge of physics (its laws, achievements and applications); 2. The student understands the need for further education and training of skills; 3. The student appreciates the development made in forensics thanks to its connection with the sciences sciences and scientific analysis of crime evidence; 4. The student is aware of the helpful role of physicochemical analysis of traces in identifying perpetrators of crimes; 5. The student is aware of the prospects for the development of forensics along with the development of the exact sciences.	[SK1] oral statement/conversation/ discussion
	[KRYMMU2_UW07] He/she has skills in understanding and analyzing social phenomena and utilizing the analysis in professional work	Student 1. is able to properly determine priorities for the implementation of a task specified by himself or others and translate it into specific actions. 2.understands the need for lifelong learning, 3. uses general knowledge of criminology (mechnanoscopy) while maintaining the ethical principles appropriate to his profession, 4. can work in interdisciplinary groups, 5. can communicate in an accessible and understandable way with people from various social and professional groups.	[SU3] text preparation/written work [SU8] observation of student's independent or team work
	[KRYMMU2_UW02] He/she acquires knowledge independently and develops his/her professional skills using various sources (in native and foreign language) and modern technologies	Student: 1. has the ability to prepare various materials, appropriate presentation of results. 2. acquire and use knowledge from various disciplines in order to develop their skills, 3. use various sources of knowledge in order to solve specific problems	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work
Subject contents	Optical and electron microscopy (with extension to scanning electron microscope SEM), physical methods of glass testing (refractive index), metallographic methods, X-ray methods.		

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>written report</td><td>51.0%</td><td>50.0%</td></tr>
<tr><td>oral/written response</td><td>51.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>[1]. K. Sikorski, A. Szummer - Podstawy ilościowej mikroanalizy rentgenowskiej". Wydawnictwo Naukowo - Techniczne, Warszawa 1994

[2] A. Barbacki, Mikroskopia elektronowa, Wyd. Politechniki Poznańskiej, 2005

[3] J. Widacki - Kryminalistyka",Wydawnictwo C.H. Beck, 2012

[4] A. Filewicz, W. Krawczyk, A. Musiał - Ślady fizykochemiczne. Ślady kryminalistyczne. Ujawnianie, zabezpieczenie, wykorzystanie" pod redakcjąM. Goca i J. Moszczyńskiego, Diffin, Warszawa 2007

[5] J.A.Litwin, M. Gajda, Podstawy technik mikroskopowych, Wydawnictwo Uniwersytetu Jagiellońskiego, 2011</td></tr>
<tr><td>Supplementary literature</td><td>[1] M. Pluta, Mikroskopia optyczna, PWN, Warszawa, 1980.

[2] D. Halliday, R. Resnick, J. Walker, Podstawy fizyki, t. 4, PWN, 2012.

[3]D.B. Murphy, Fundamentals of Light Microscopy and Imaging, John Wiley and Sons, 2001r

[4] I. Sołtyszewski, P. Polak - Badania kryminalistyczne", Wydawnictwo UMW, Olsztyn 2007

[5]Springer Handbook of Microscopy</td></tr>
<tr><td>eResources addresses</td><td>Supplementary
http://www.olympusmicro.com/A - Olympus microscopy
http://www.microscopyu.com/ - Nikon microscopy</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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