

Subject card

Subject name and code	Liquid Chromatography in Forensic Practice, PG_00188337						
Field of study	Chromatografia cieczowa w praktyce kryminalnej (Ćw.laboratoryjne)						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Jarosław Ruczyński				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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		5.0		15.0	50
Subject objectives	ebe ciągłego kształcenia się- familiarize students with the issues soet out in the program content of the exercises						
	- faniliarize students with th theoretical and practical aspects of liquid chromatography used in forensic analysis						
	- familiarize students with issues related to sample preparation, selection of separation methods, result validation, and data interpretation for court proceedings						
	- developing skills in using specialist equipment and providing knowledge enabling employment in forensic analysis laboratories						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[AKRL3_K02] The graduate is ready to make reliable, objective decisions and take responsibility for the interpretation of research results.	The graduate is aware of the importance of reliability and objectivity of decisions made while working in a forensic analysis laboratory. The graduate understands the responsibility for the reliable and credible interpretation of the results of research conducted.	[SK3] opracowanie tekstowe/praca pisemna
	[AKRL3_U11] The graduate is able to work effectively in a laboratory team while adhering to professional ethics and organisational rules.	The graduate appreciates the need to be able to work in a laboratory team. when working in the laboratory The graduate understands the responsibility for the reliability of analytical results and their documentation.	[SU8] obserwacja samodzielnej lub zespołowej pracy studenta
	[AKRL3_K04] The graduate is ready to cooperate with representatives of other fields—law, medicine, biology—within forensic expertise.	The graduate has the knowledge and skills needed for interdisciplinary work in cooperation with representatives of various fields. The graduate understands the need to cooperate with representatives of other fields (law, medicine, biology) when conducting forensic expertise.	[SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[AKRL3_U03] The graduate is able to perform analyses using instrumental methods (spectroscopy, chromatography, microbiological tests) and interpret research results.	The graduate is able to perform chromatographic analysis of selected forensically relevant substances. The graduate is able to select methodological parameters and optimize separation conditions. The graduate is able to interpret chromatograms and formulate analytical conclusions.	[SU2] prezentacja/projekt/referat/raport [SU6] demonstracja umiejętności praktycznych
	[AKRL3_K01] The graduate is ready to critically evaluate their own knowledge, understand its importance for solving cognitive and practical problems, and to seek expert opinions when necessary.	The graduate has the ability to critically evaluate his or her own knowledge. The graduate understands the need for further education and is aware of the importance of acquired knowledge in solving practical problems. The graduate remains critical in expressing opinions and is open to seeking expert opinions.	[SK1] wypowiedź ustna/rozmowa/dyskusja
	[AKRL3_W03] The graduate knows and understands the structure and chemical properties of compounds relevant in forensic examinations.	The graduate defines and presents the chemical structure and knows the chemical properties of basic groups of compounds important in forensic research (drugs, medicines, toxins, hazardous substances). The graduate knows and understands their importance for the functioning of living organisms.	[SW3] opracowanie tekstowe/praca pisemna
Subject contents	1. Familiarization with the construction of chromatographic equipment (detectors, pumps, degassers, injectors, columns) and its operation (preparing the HPLC or UHPLC-MS system for operation, rinsing, venting). 2. Basic chromatographic parameters (retention time, selectivity, resolution, types of mobile phases). 3. Sample preparation for analysis (SPE extraction and other simple isolation techniques, filtration, dilution, standard solutions). 4. Model analysis of drug or medication mixtures (method selection, calibration, standard curve, and assays). 5. Examination of samples from evidence, e.g., dyes and chemicals. 6. Interpretation of analytical results (peak identification, comparison of chromatographic profiles). 7. Preparation of a research report.		
Prerequisites and co-requisites	The student should have basic knowledge of organic chemistry, biochemistry, analytical chemistry and separation techniques (especially liquid chromatography).		

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Reports on laboratory exercises performed	100.0%	20.0%
	Written tests covering topics related to individual exercises	51.0%	80.0%
Recommended reading	Basic literature	1. Zygfryd Witkiewicz, Waldemar Wardencki, Irena Malinowska, <i>Chromatografia cieczowa - teoria i praktyka</i> , Wydawnictwo Naukowe PWN, Warszawa, 2019. 2. Beata Jasiewicz, Iwona Kowalczyk, Joanna Kurek, Arleta Sierakowska, Rafał Wawrzyniak, <i>Chemia sądowa</i> , Wydanie II, Wydział Chemii UAM, Poznań 2017. 3. Małgorzata Król, Woźniakiewicz Michał, Kościelniak Paweł, Wietecha-Posłuszny Renata, <i>Analityka sądowa</i> , Wydawnictwo Naukowe PWN, Warszawa 2022.	
	Supplementary literature	Various handbooks concerning the use of liquid chromatography in forensic analysis. Contemporary scientific articles on the use of liquid chromatography in forensics.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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