

Subject card

Subject name and code	Liquid Chromatography in Forensic Practice, PG_00188334						
Field of study	Chromatografia cieczowa w praktyce kryminalnej (Wykład)						
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			1.0	
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	15.0	0.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	- familiarize students with the issues soet out in the program content of the lecture - 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_U02] The graduate can plan and organize individual and team work and collaborate with others in team projects (including interdisciplinary teams).	The graduate uses their theoretical and practical knowledge to identify the stages, operations, and equipment used in forensic analysis. The graduate is aware of the need to critically analyze their own work. The graduate appreciates the need for teamwork skills.	[SU8] obserwacja samodzielnej lub zespołowej pracy studenta
	[AKRL3_W07] The graduate knows and understands the principles of quality assurance in analytical and forensic laboratories.	The graduate is aware of the importance of reliability and accuracy in the work performed in a forensic laboratory. The graduate understands the responsibility for the reliability and documentation of analysis results.	[SW1] 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.	[SW4] test/egzamin - ustny lub pisemny
	[AKRL3_U01] The graduate is able to identify, analyse and solve complex research problems in chemistry and forensic science by selecting appropriate methods and information sources.	The graduate, using the acquired theoretical and practical knowledge in the field of chemistry and forensics, is able to recognize and solve complex research problems, selecting appropriate analytical methods and using the appropriate sources of information.	[SU4] test/egzamin - ustny lub pisemny
	[AKRL3_U07] The graduate is able to communicate using specialist terminology in chemistry and forensic science while working in interdisciplinary teams.	The graduate is able to use specialist terminology in the field of chemistry and forensics, necessary for the presentation (in written or oral form) of the content included in the course program and in cooperation in interdisciplinary teams.	[SU8] 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.	[SU4] test/egzamin - ustny lub pisemny
Subject contents	1. Introduction to liquid chromatography - theoretical basis. 2. Types of chromatographic systems and detectors used. 3. Methods of preparing samples for forensic analysis. 4. Structure and properties of chemical substances relevant to forensic analysis. 5. Methods of chromatographic analysis of drugs, psychotropic drugs, toxins, doping agents and other dangerous substances. 6. Chromatographic analysis of inks, dyes, and polymeric materials. 7. Validation of liquid chromatography methods used in forensic laboratories. 8. Case studies - examples of liquid chromatography applications in forensic science.		
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
	Graded credit - test	51.0%	100.0%

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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