

Subject card

Subject name and code	Diploma Seminar, PG_00188357						
Field of study	Seminarium dyplomowe (Seminarium)						
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 Optional subject group	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	3		Language of instruction			Polish	
Semester of study	6		ECTS credits			3.0	
Learning profile	academic		Assessment form			credit	
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Joanna Makowska				
	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		10.0		35.0	75
Subject objectives	Consolidation and expansion of knowledge in the field of the chosen specialization and/or the diploma project topic. Development of the ability to prepare scientifically accurate and technically sound multimedia presentations. Development of the ability to conduct scientific discussions.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[AKRL3_K04] The graduate is ready to cooperate with representatives of other fields—law, medicine, biology—within forensic expertise.	The student is able to effectively communicate information regarding research methods, analytical results, and conclusions in a manner understandable to individuals from various fields, including those outside of chemistry. The student is able to collaborate within an interdisciplinary team, applying chemical and forensic knowledge to solve shared research problems. The student is able to adapt their communication style to the audience — whether a specialist, laboratory technician, law enforcement officer, or a professional from another sector. The student is able to present the results of team work, analyze the opinions of group members, and participate in substantive discussions on proposed solutions. The student is able to formulate clear, concise, and scientifically accurate communications regarding procedures, hazards, irregularities, and recommendations in the context of chemistry and forensic science.	[SK1] wypowiedź ustna/rozmowa/dyskusja [SK5] realizacja zadania problemowego
	[AKRL3_U08] The graduate is able to prepare oral and written presentations and reports in Polish and in chosen foreign language, as well as present and evaluate different viewpoints and engage in discussion in those languages.	The student is able to prepare written scientific reports and papers in both Polish and a foreign language, using appropriate terminology and scientific text structure. The student is able to develop and deliver an oral presentation on chemical or forensic topics in both Polish and a foreign language, ensuring clarity, linguistic correctness, and substantive accuracy. The student is able to analyze and evaluate different opinions, arguments, and viewpoints presented in scientific literature or group discussions, in both Polish and a foreign language. The student is able to participate in substantive scientific discussions in both languages, formulating logical arguments, responding to questions, and addressing the viewpoints of others. The student is able to adapt their style of communication (written and oral) to different audiences, including specialists, students, interdisciplinary teams, or individuals outside the scientific community. The student is able to properly cite sources and reference scientific literature in accordance with academic standards in both languages.	[SU1] wypowiedź ustna/rozmowa/dyskusja [SU2] prezentacja/projekt/referat/raport [SU3] opracowanie tekstowe/praca pisemna

	Course outcome	Subject outcome	Method of verification
	[AKRL3_U07] The graduate is able to communicate using specialist terminology in chemistry and forensic science while working in interdisciplinary teams.	The student is able to effectively communicate information regarding research methods, analytical results, and conclusions in a way that is understandable to individuals from various fields, including those outside of chemistry. The student is able to collaborate within an interdisciplinary team, applying chemical and forensic knowledge to solve shared research problems. The student is able to adapt their communication style to the audience — whether a specialist, laboratory technician, law enforcement officer, or a professional from another sector. The student is able to present the results of team work, analyze the opinions of group members, and participate in substantive discussions on proposed solutions. The student is able to formulate clear, concise, and scientifically accurate communications regarding procedures, hazards, irregularities, and recommendations in the context of chemistry and forensic science. The student is able to co-create team documentation, such as protocols, reports, or procedural descriptions, using precise specialist terminology.	[SU2] prezentacja/projekt/referat/raport [SU3] opracowanie tekstowe/praca pisemna [SU5] realizacja zadania problemowego [SU8] obserwacja samodzielnej lub zespołowej pracy studenta

	Course outcome	Subject outcome	Method of verification
	[AKRL3_U03] The graduate is able to perform analyses using instrumental methods (spectroscopy, chromatography, microbiological tests) and interpret research results.	The student is able to select an appropriate instrumental method (spectroscopic, chromatographic, or microbiological) for a given analytical problem. The student is able to properly prepare a sample for instrumental analyses in accordance with laboratory procedures and method requirements. The student is able to operate selected research instruments (e.g., spectrophotometer, spectrometer, chromatograph, microbiological incubator) in compliance with instructions and safety regulations. The student is able to perform instrumental measurements while ensuring procedural accuracy, parameter control, and minimization of analytical errors. The student is able to interpret data obtained from instrumental analyses, identify analytical signals, determine concentrations, construct calibration curves, and assess measurement quality. The student is able to recognize possible sources of error (instrumental, environmental, human) and evaluate their impact on the final result. The student is able to prepare a report on the conducted analyses, including a description of the method, instruments used, results, their interpretation, and conclusions. The student is able to critically assess the reliability and limitations of the applied instrumental method in relation to the analytical problem under investigation.	[SU5] realizacja zadania problemowego [SU6] demonstracja umiejętności praktycznych [SU8] obserwacja samodzielnej lub zespołowej pracy studenta

	Course outcome	Subject outcome	Method of verification
	[AKRL3_K06] The graduate is ready to follow occupational health and safety regulations in the laboratory and care for the safety of themselves and others.	The student is able to identify chemical, physical, and biological hazards associated with laboratory work and correctly interpret labels, safety data sheets, and instructions for substances and equipment. The student is able to use personal and collective protective equipment, such as safety goggles, gloves, fume hoods, and ventilation systems, in accordance with established procedures. The student follows safe working practices when handling reagents, equipment, and instruments, minimizing the risk of accidents and contamination. The student is able to respond appropriately to emergency situations, such as chemical spills, fires, injuries, or exposure to hazardous substances, in accordance with required emergency procedures. The student is able to ensure their own safety and the safety of others by reporting observed irregularities, hazards, or damaged equipment, and by supporting coworkers in maintaining high safety standards.	[SK5] realizacja zadania problemowego [SK6] demonstracja umiejętności praktycznych
	[AKRL3_K07] The graduate is ready to fulfil social obligations and initiate actions in the public interest.	The student understands the importance of a scientist's social responsibility and the impact of chemical and forensic research on public safety. The student is able to undertake actions aligned with the public interest, particularly in areas related to safety, health protection, and environmental care. The student is able to recognize situations requiring ethical or civic action, such as reporting hazards, irregularities, or risks to society. The student is able to assess the role of a specialist in building public trust through reliability, transparency, and impartiality in data interpretation and the preparation of expert opinions.	[SK1] wypowiedź ustna/rozmowa/dyskusja [SK5] realizacja zadania problemowego [SK6] demonstracja umiejętności praktycznych

	Course outcome	Subject outcome	Method of verification
	[AKRL3_W11] The graduate knows and understands the basic concepts and principles of intellectual property protection and copyright law, especially in relation to scientific, research and expert activities.	The student understands the principles of ethical and legally compliant use of third-party publications, data, research results, and expert materials. The student is able to distinguish which elements of scientific and project work are legally protected (e.g., a creative work, data, an invention, documentation). The student is able to identify the obligations arising from copyright law when preparing reports, presentations, publications, and expert opinions. The student knows the principles of preparing and sharing research documentation in accordance with legal requirements, including citation rules, licensing, and rights to research results. The student is able to assess the risk of intellectual property rights infringement in research projects and expert analyses and propose preventive measures.	[SW2] prezentacja/projekt/referat/ raport [SW3] opracowanie tekstowe/ praca pisemna [SW5] realizacja zadania problemowego
	[AKRL3_U09] The graduate is able to independently plan and implement their professional development and lifelong learning.	The student develops the ability to think critically and evaluate the quality of information related to the research context and the assessment of results. Through reading scientific texts, the student learns to analyze and synthesize information, identify key concepts, and understand complex chemical issues. The student is able to define a clear goal or task they aim to achieve. The student understands the need to independently search for information in scientific literature and is able to formulate appropriate questions.	[SU5] realizacja zadania problemowego
	[AKRL3_U11] The graduate is able to work effectively in a laboratory team while adhering to professional ethics and organisational rules.	he student is able to collaborate effectively within a laboratory team, sharing responsibilities and adjusting their work methods to support the team's common goals. The student is able to communicate clearly, precisely, and professionally, conveying information related to procedures, results, observed issues, and safety concerns. The student is able to adhere to principles of professional ethics, including honesty in documenting results, respect for the work of others, confidentiality of data, and responsibility for assigned tasks. The student is able to follow laboratory safety regulations, using personal and collective protective equipment and ensuring the safety of themselves and other team members. The student is able to respond responsibly to irregularities and hazards by reporting them to the appropriate personnel and taking actions to minimize risk.	[SU5] realizacja zadania problemowego [SU6] demonstracja umiejętności praktycznych [SU8] obserwacja samodzielnej lub zespołowej pracy studenta

	Course outcome	Subject outcome	Method of verification
	[AKRL3_K03] The graduate is ready to maintain confidentiality of research data and evidence material.	The student is able to understand the importance of confidentiality in laboratory, expert, and forensic work, as well as the legal and ethical consequences of its violation. The student is able to identify confidential information and distinguish it from public data; store and protect research data and evidence material from unauthorized access; and comply with procedures related to documentation flow. The student is able to communicate responsibly, sharing sensitive information only with authorized individuals; demonstrate discretion in professional interactions; recognize situations that pose a risk of confidentiality breaches and respond according to safety procedures; and take responsibility for maintaining confidentiality, being aware of the impact of their actions on investigations, the well-being of involved parties, and the reputation of the institution.	[SK5] realizacja zadania problemowego [SK7] wpisy i opinia w dzienniczku praktyk
	[AKRL3_U12] The graduate is able to use a foreign language at the B2 level in the field of chemical and forensic terminology.	The student is able to read and understand scientific texts in the field of chemistry and forensic science in a foreign language at the B2 level. The student uses specialized chemical and forensic terminology in both oral and written communication in a foreign language. The student is able to prepare written analyses, reports, or summaries of research results in a foreign language, using appropriate vocabulary and linguistic structures. The student is able to deliver an oral scientific presentation or describe research methods in a foreign language while maintaining linguistic and substantive accuracy.	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU2] prezentacja/projekt/referat/ raport [SU3] opracowanie tekstowe/ praca pisemna
Subject contents	The course content is varied and tailored to the scope of the chosen specialization and/or the topic of the diploma project.		
Prerequisites and co-requisites	Knowledge of the fundamental concepts in chemical analytics and/or related scientific fields.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Preparation and delivery of several multimedia presentations related to the research topic being carried out.	100.0%	100.0%

Recommended reading	Basic literature	A. Literatura wymagana do ostatecznego zaliczenia zajęć (zdania egzaminu): A.1. wykorzystywana podczas zajęć Książki i artykuły naukowe związane z wybraną specjalnością i/lub tematyką projektu dyplomowego A.2. studiowana samodzielnie przez studenta Książki i artykuły naukowe związane z wybraną specjalnością i/lub tematyką projektu dyplomowego
	Supplementary literature	Books and scientific articles related to the chosen specialization and/or the diploma project topic.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Solving research problems that arise during the implementation of the project (e.g., procedure optimization, improving method efficiency).	
Work placement	Not applicable	

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