

Subject card

Subject name and code	Laboratory course, PG_00144466		
Field of study	Chemistry		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	postgraduate 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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	10.0
Learning profile	academic	Assessment form	
Conducting unit	Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Joanna Makowska	

	Teachers		dr hab. Karol Krzywiński dr hab. Artur Sikorski dr Samanta Romanowska dr Lidia Chomicz-Mańka dr hab. Barbara Dmochowska dr Daria Grzywacz dr hab. Dagmara Strumińska-Parulska dr hab. Agnieszka Gajewicz-Skrętna dr hab. Alicja Boryło dr Grzegorz Olszewski dr hab. Agnieszka Żylicz-Stachula dr hab. Joanna Makowska dr hab. Dariusz Wyrzykowski dr inż. Krzysztof Żamojć dr inż. Beata Bajorowicz dr hab. inż. Anna Białk-Bielińska prof. dr hab. Jolanta Kumirska dr Ewa Mulkiwicz dr hab. Marek Gołębiowski dr hab. Łukasz Haliński dr Anna Wcisło dr hab. Beata Grobelna dr Dorota Zarzeczańska dr hab. Sylwia Freza dr Agata Gitlin-Domagalska dr hab. Jarosław Ruczyński dr hab. Anna Łęgowska prof. dr hab. Piotr Rekowski dr Natalia Ptaszyńska dr hab. Aneta Szymańska dr hab. Emilia Sikorska dr Julia Witkowska dr hab. Zbigniew Kaczyński dr Marta Spodzieja dr hab. Magdalena Wysocka dr hab. Elżbieta Jankowska dr Maria Dzierżyńska dr Marta Orlikowska prof. dr hab. Mariusz Makowski dr Sandra Brzeska				
	Lesson types						
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	180.0	0.0	0.0	180
	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	180	30.0	40.0	250
Subject objectives	Planning and performance of experimental research project by each student working under the control / guidance of supervisor. Presentation of obtained research results in the form of written master thesis				

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_U03] Finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry.	Student: <ul style="list-style-type: none"> • performs scheduled experiments, makes observations • analyzes the obtained results and compares them with available literature data • draws conclusions from the conducted tests and proves their correctness in based on available literature data • presents the same content in a different language convention • systematically collects and prepares documentation of her/his research work 	[SU2] presentation/project/paper/report [SU5] implementation of a problem task
	[CHEMMU2_U01] Plans and implements chemical experiments of medium complexity.	Student is able to plan chemical experiments of advanced difficulty. The student is able to analyze and synthesize information, isolate key concepts and understand complex chemical issues at an advanced level - The student has the ability to think critically in the context of explaining the assumptions of his or her research problem in the field of the studied specialty.	[SU5] implementation of a problem task
	[CHEMMU2_U10] Reads with understanding scientific and popular science chemical texts in English.	Student critically selects source texts to conduct a reliable analysis of his or her own data.	[SU3] text preparation/written work [SU5] implementation of a problem task
	[CHEMMU2_K06] Undertakes research tasks consciously and responsibly, understanding the social aspects of the practical application of the acquired knowledge and skills and the responsibility related to it.	-Student is able to define a clear goal or task that he wants to achieve. Identifies the stages, operations and equipment involved in production. The student uses his knowledge in practice. - Student knows the basic concepts and principles related to the protection of intellectual property. Knows the principles of copyright and patent law	[SK5] implementation of a problem task
	[CHEMMU2_K05] Understands the need for independent search of information in scientific literature and popular science magazines.	- Student independently uses literature databases and critically selects source texts. - Student is aware of the consequences of disregarding intellectual property and the abuse of artificial intelligence tools in scientific, research and teaching work.	[SK2] presentation/project/paper/report [SK5] implementation of a problem task
	[CHEMMU2_W14] Explains the basic concepts and principles in the field of industrial property and copyright protection and recalls knowledge about the management of intellectual property resources; is able to use patent information.	Student: <ul style="list-style-type: none"> • names and describes methods of synthesis and analysis and /or methods of computer theoretical calculations used during realization of master project • distinguishes and characterizes individual experimental / IT techniques used during realization of research project • identifies scientific and research apparatuses used during realization of research project and explains the principles of their operations 	[SW1] oral statement/conversation/discussion
	[CHEMMU2_K04] Correctly identifies and resolves dilemmas related to the profession of a chemist.	Student: <ul style="list-style-type: none"> • works independently • correctly defines priorities necessary for realization of her/his own aims • cares for safety during own-self realization of chemical experiments • takes into account the made arrangements for realization of experiments 	[SK1] oral statement/conversation/discussion

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Subject contents	The program content is varied and depends on the scope of the topic of the master thesis						
Prerequisites and co-requisites	Organic chemistry, Biochemistry, Physical chemistry, Spectrochemistry, Instrumental analysis, Intellectual property protection, Advanced chemistry laboratory. Knowledge of organic and physical chemistry and biochemistry at the first-cycle education, knowledge of the basic principles of occupational health and safety in a chemical laboratory, knowledge of the construction and operating principle of basic chemical apparatus used in the laboratory of organic synthesis and physicochemistry, knowledge of basic concepts and principles of property protection industrial and copyright law, the ability to synthesize simple organic compounds based on procedures written in Polish and English languages.						
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Presentation of the obtained research results in the form of a written master's thesis.</td> <td>100.0%</td> <td>100.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Presentation of the obtained research results in the form of a written master's thesis.	100.0%	100.0%
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Example issues/ example questions/ tasks being completed							
Work placement	Not applicable						

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