

Subject card

Subject name and code	Organic Chemistry, PG_00188280						
Field of study	Chemia organiczna (Ćw.audytoryjne)						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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	1		Language of instruction		Polish POLISH		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Carbohydrate Chemistry -> Department of Organic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Barbara Dmochowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	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	The aim of the classes is to analyze and practice the material (using specific examples) that was presented to students during the lecture. Students will become familiar with: the basic types of organic compounds; methods of writing their structures and predicting spatial structure; the physical properties and reactivity of organic compounds; aspects of stereochemistry of organic compounds: cis-trans isomerism, rules of substituent priority, chirality of organic compounds, optical isomerism, determination of spatial configuration of compounds containing an asymmetric carbon atom; the possibilities of predicting the behavior of bifunctional compounds; the toxicity of selected organic compounds; and the development of the ability to plan a series of successive reactions leading to a specific product.												
Learning outcomes	<table><tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr><tr><td>[AKRL3_K05] The graduate is ready to promote science and raise social awareness in the field of forensic analytics.</td><td>The graduate demonstrates that thorough knowledge and reliable chemical research are the foundation of justice and safety. They make others aware of how dangerous chemical substances can be (e.g., synthetic drugs, explosives) and how important their control is.</td><td>[SK8] obserwacja samodzielnej lub zespołowej pracy studenta</td></tr><tr><td>[AKRL3_U07] The graduate is able to communicate using specialist terminology in chemistry and forensic science while working in interdisciplinary teams.</td><td>Graduates are able to explain what organic compounds are, how chemical reactions operate, and why they are significant in forensic analysis. They can demonstrate how an understanding of functional groups and isomerism contributes to the detection of drugs, toxins, and explosives. Through knowledge about the toxicity and effects of organic compounds, it can support anti-drug and anti-smoking campaigns.</td><td>[SU4] test/egzamin - ustny lub pisemny</td></tr><tr><td>[AKRL3_W01] The graduate knows and understands, at an advanced level, the laws and theories in the field of chemistry, as well as the basics of biology, mathematics and law constituting general knowledge in the scientific disciplines forming the theoretical foundations relevant to the study program.</td><td>A graduate not only applies organic chemistry in forensic practice, but also translates it into language understandable to society. In doing so, they support citizens' legal, health, and scientific awareness, while fostering a culture of trust in expert knowledge.</td><td>[SW1] wypowiedź ustna/rozmowa/dyskusja</td></tr></table>	Course outcome	Subject outcome	Method of verification	[AKRL3_K05] The graduate is ready to promote science and raise social awareness in the field of forensic analytics.	The graduate demonstrates that thorough knowledge and reliable chemical research are the foundation of justice and safety. They make others aware of how dangerous chemical substances can be (e.g., synthetic drugs, explosives) and how important their control is.	[SK8] obserwacja samodzielnej lub zespołowej pracy studenta	[AKRL3_U07] The graduate is able to communicate using specialist terminology in chemistry and forensic science while working in interdisciplinary teams.	Graduates are able to explain what organic compounds are, how chemical reactions operate, and why they are significant in forensic analysis. They can demonstrate how an understanding of functional groups and isomerism contributes to the detection of drugs, toxins, and explosives. Through knowledge about the toxicity and effects of organic compounds, it can support anti-drug and anti-smoking campaigns.	[SU4] test/egzamin - ustny lub pisemny	[AKRL3_W01] The graduate knows and understands, at an advanced level, the laws and theories in the field of chemistry, as well as the basics of biology, mathematics and law constituting general knowledge in the scientific disciplines forming the theoretical foundations relevant to the study program.	A graduate not only applies organic chemistry in forensic practice, but also translates it into language understandable to society. In doing so, they support citizens' legal, health, and scientific awareness, while fostering a culture of trust in expert knowledge.	[SW1] wypowiedź ustna/rozmowa/dyskusja
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Subject contents	In the world of forensic science, organic compounds play a key role in the process of crime detection and evidence analysis. Thanks to their unique chemical properties and diversity, they become an invaluable tool for experts engaged in the examination of evidentiary materials. Their presence may indicate the existence of specific substances in the analyzed material; therefore, during the sessions the following topics will be discussed and analyzed: 1. Basic reactions for obtaining individual groups of organic compounds covered in the lecture (alkanes, alkenes, alkynes, aromatic compounds, alcohols, ethers, aldehydes, ketones, carboxylic acids and their derivatives, amines); 2. Reaction mechanisms: addition (A), substitution (S), and elimination (E); 3. Aspects of stereochemistry of organic compounds (cis-trans isomerism, rules of substituent priority, chirality of organic compounds, optical isomerism, determination of spatial configuration of compounds containing an asymmetric carbon atom); 4. Fundamental physical and chemical properties of the individual groups of organic compounds (as discussed in the lecture); 5. Multifunctional compounds.								
Prerequisites and co-requisites									
Assessment methods and criteria	<table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td></td><td>51.0%</td><td>100.0%</td></tr></table>	Subject passing criteria	Passing threshold	Percentage of the final grade		51.0%	100.0%		
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Recommended reading	Basic literature	Organic Chemistry, L.G. Wade;							
		Organic Chemistry, Morrison R., Boyd R;							
		Organic Chemistry, McMurry John.							
	Supplementary literature	Organic Chemistry, Paula Yurkanis Bruice;							
	eResources addresses								
Example issues/ example questions/ tasks being completed	Describe the addition reaction to double bonds in alkenes. How can knowledge of such reactions be used in the analysis of chemical traces at a crime scene?								
Work placement	Not applicable								

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