

Subject card

Subject name and code	Contemporary organic synthesis, PG_00179536						
Field of study	Chemistry						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Master's studies	Subject group			Optional subject group		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Laboratory of Glycochemistry -> Department of Organic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Andrzej Nowacki					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	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	20.0	55		
Subject objectives	<p>To broaden and enhance the knowledge of organic chemistry.</p> <p>To familiarize with the problems of modern organic synthesis.</p> <p>To find solutions to the problems of modern synthesis.</p>						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[CHEMMU2_W04] Applies the acquired knowledge to an in-depth description of the properties of chemical connections, methods of their synthesis and analysis.	Based on the acquired knowledge, the student is able to solve problems related to planning the synthesis of different classes of organic compounds.			[SW4] test/exam - oral or written		
	[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	The student recognizes the types of selective reactions; understands the importance of using protective groups to achieve selectivity; learns about techniques and methods useful in modern synthesis; learns about issues related to planning organic synthesis; becomes familiar with the role of metals in the synthesis of organic compounds; learns about methods of forming bonds between carbon atoms and carbon-heteroatom bonds; learns about the potential of oxidation and reduction processes in synthesis; learns about aspects related to asymmetric synthesis.			[SW4] test/exam - oral or written		

Subject contents	<ol style="list-style-type: none"> 1. Selective and specific reactions in organic chemistry. 2. Protective groups in organic synthesis. 3. Different techniques and methods of organic synthesis. 4. Planning of multi-step organic synthesis. 5. Chemistry of carbocations, carboanions, radicals and carbenes. 6. Metals of main and side groups in organic synthesis. 7. Selective formation of a single carbon-carbon bond. 8. Selective formation of a carbon-carbon double bond. 9. Selective formation of carbon-heteroatom. 10. Oxidation and reduction reactions in organic chemistry. 11. Stereochemistry in organic synthesis. 12. Selected elements of asymmetric synthesis. 13. Retrosynthesis in organic synthesis. 											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Subject passing criteria</th> <th style="width: 33%;">Passing threshold</th> <th style="width: 33%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Passing grade, passing score on written exam consisting of about 15 open questions</td> <td>51.0%</td> <td>100.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Passing grade, passing score on written exam consisting of about 15 open questions	51.0%	100.0%			
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Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Define and explain the basic concepts of reaction selectivity. 2. Illustrate the importance of protecting groups in synthesis. 3. Give examples of reactions to form carbon-carbon bonds using metals. 4. List and discuss the basic methods used in asymmetric synthesis. 											
Work placement	Not applicable											

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