



JAGIELLONIAN  
UNIVERSITY  
IN KRAKÓW

## Organic Chemistry

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Joint Bachelor in Sustainability	<b>Education cycle</b> 2025/26	
<b>Speciality</b> Sustainable Physics & Chemistry	<b>Subject code</b> UJ.WPAJBSSPCS.880.16406.25	
<b>Organizational unit</b> Faculty of Law and Administration	<b>Lecture languages</b> english	
<b>Study level</b> first cycle (joint degree programme)	<b>Subject related to scientific research</b> Yes	
<b>Study form</b> full-time degree programme	<b>Disciplines</b> Chemical sciences	
<b>Education profile</b> General academic	<b>ISCED classification</b> 0588 Interdisciplinary programmes involving broad field 05	
<b>Mandatory</b> obligatory	<b>USOS code</b>	
<b>Subject coordinator</b>	Piotr Szwedo	
<b>Lecturer</b>	Filip Ekholm	
<b>Period</b> Semester 4	<b>Examination</b> exam	<b>Number of ECTS points</b> 5.0
	<b>Activities and hours</b> Discussion class: 29	

#### Goals

C1	Organic Chemistry 1 focuses on teaching the fundamentals of organic chemistry. We will cover topics such as classification of organic compounds, principles of the systematic nomenclature, structural isomerism and principles of stereochemistry. In addition, we will explore the effects of distinct chemical bonds, the basis for the observed reactivity of distinct functional groups and the most essential organic reactions.
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## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	the chemical bonds present in organic compounds and their effects on the three-dimensional structure	JBS_K1_W06, JBS_K1_W07	written exam
W2	the most common organic reaction types (oxidation-, reduction, substitution, elimination- and addition reactions)	JBS_K1_W06, JBS_K1_W07	written exam
W3	the role of organic chemistry in the modern society	JBS_K1_W06, JBS_K1_W07	written exam
<b>Skills - Student can:</b>			
U1	differentiate isomers and use systematic nomenclature in the naming of organic compounds	JBS_K1_U02	written exam
U2	identify functional groups and draw conclusions on the chemical properties of compounds based on their molecular structures	JBS_K1_U02	written exam
U3	rationalize and interpret reaction mechanisms in organic reactions	JBS_K1_U02	written exam
<b>Social competences - Student is ready for:</b>			
K1	enhance their problem-solving skills and communication skills by participating in the interactive lectures and weekly exercises	JBS_K1_K04	written exam

## Calculation of ECTS points

Activity form	Activity hours*	
Discussion class	29	
preparation for classes	30	
preparation for the exam	40	
tasks solving	36	
<b>Student workload</b>	<b>Hours</b> 135	<b>ECTS</b> 5.0

\* hour means 45 minutes

## Study content

No.	Course content	Subject's learning outcomes
1.	Introduction to course and organic chemistry	W3, K1
2.	Orbital theory and chemical bonds	W1, U2, K1

No.	Course content	Subject's learning outcomes
3.	Naming of organic compounds	U1, K1
4.	Conformations and stereochemistry	W1, U1, K1
5.	Principles of aromaticity	W1, K1
6.	General introduction to analyzing organic reactions	W2, U3, K1
7.	Reactivity/reactions of alkenes and alkynes	W2, U2, U3, K1
8.	Reactivity/reactions of conjugated double bonds	W2, U2, U3, K1
9.	Reactivity/reactions of alkyl halides	W2, U2, U3, K1
10.	Reactivity/reactions of alcohols/ether	W2, U2, U3, K1
11.	Reactivity/reactions of aldehydes/ketones	W2, U2, U3, K1
12.	Reactivity/reactions of carboxylic acids and derivatives	W2, U2, U3, K1
13.	Introduction to research topics in organic chemistry	W3, K1

## Course advanced

### Teaching methods :

conversation lecture, practicals

Activities	Examination methods	Credit conditions
Discussion class	written exam	15/30 points are required to pass the exam. Students can gain max. 3 additional points from the go-through exercises completed during the course.

## Entry requirements

None

## Literature

### Obligatory

1. Lecture notes. The following books can be used as additional learning support: Pearson education "organic chemistry" by Bruice or alternatively Oxford University Press "organic chemistry" by Clayden, Warren et.al.

## Effects

Code	Content
JBS_K1_K04	The graduate can critically assess and verbalize own competencies and skills related to different aspects of sustainability as well as their need for development.
JBS_K1_U02	The graduate can present and report knowledge, methodologies, ideas, problems and solutions, clearly and comprehensively, in different forms destined for different audiences - including discussions and debates which require defending a substantiated opinion, as well as conversations in a foreign language at the CEFR B2 level.
JBS_K1_W06	The graduate can describe interconnections between various aspects of sustainability and identify their significance in the context of natural and social sciences, with a special focus on disciplines included in the selected specialisation track (law and politics; chemistry and physics; chemistry and biology; economics and geography; economics, management and engineering; humanities).
JBS_K1_W07	The graduate can apply the theory and methodology of disciplines included in the selected specialisation track to sustainability-related problems, taking into consideration practical limitations such as protection of intellectual property.