University of Gdańsk

Subject card

Subject name and code	Stereochemistry of organic compounds, PG_00073210		
Field of study	Chemistry		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study
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	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	dr hab. Andrzej Nowacki	

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

Searching for symmetry elements in the molecules of organic compounds and assigning molecules to symmetry groups.Manipulating on the spatial patterns of organic compounds and presenting them in the form of projection patterns.Determination of configurations of chirality centers of different types.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_U01] Identifies, analyses and solves problems in the field of broadly understood chemistry on the basis of the acquired knowledge.	Solves questions about the symmetry of organic compounds; assigns organic compound molecules to symmetry groups based on analysis of symmetry elements. Performs projection formula transformations of stereoisomers and determines absolute configuration. Exercises recognition of prochiral centers.	[SU4] test/exam - oral or written [SU8] observation of student's independent or team work
[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.	Develops skills in the use of stereochemistry terminology.	[SU4] test/exam - oral or written [SU8] observation of student's independent or team work
[CHEML3_U09] Is able to learn independently.	Develops the ability to see spatially in chemistry and the environment.	[SU1] oral statement/conversation/ discussion [SU8] observation of student's independent or team work
[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.	Understands the effect of chirality, or lack thereof, on the properties of chemical compounds. Sees the importance of chirality to the functioning of living organisms	[SW1] oral statement/ conversation/discussion

<table>
<tr><td>Subject contents</td><td>Symmetry of organic molecules. Chirality in molecules lacking chirality centers: allenes, helices; biphenyls, helicenes, molecules with planar chirality. Transformations of projective patterns. Configuration: relative and absolute, methods for determining relative and absolute configuration. Stereoisomerism and prochirality.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Colloquium, open questions, positive evaluation of colloquia</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>M. Nogradi - Stereochemistry, fundamentals and applications, PWN, Warsaw 1988.W. M Potapow - Stereochemistry, PWN, Warsaw 1986.D. G. Morris - Stereochemistry, PWN, Warsaw 2008.</td></tr>
<tr><td>Supplementary literature</td><td>E. L. Eliel, S. W. Wilen, L. N. Mander Stereochemistry of organic compounds, Wiley & Sons, New York 1994 K. Mislow Introduction to stereochemistry, Dover Publications, New York 2006</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. in the given compounds, list all the elements of symmetry and determine the point group (symmetry) belongs to the given compound2. show the given compounds in Fischer projection3. determine the stereochemical relationship between the compounds (identical compound, enantiomer, diastereoisomer, constitutional isomer ...).4. In the given compounds, determine the seniority of the substituents and determine the configuration of the chirality centers (chirality axes)</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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