GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Organic chemistry, PG_00036271		
Field of study	Green Technologies		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
Education level	first-cycle 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	7.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Organic Chemistry -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Krystyna Dzierzbicka	
	Teachers	prof. dr hab. inż. Krystyna Dzierzbicka Klaudia Chmielewska	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	45.0	30.0	15.0	0.0	0.0	90

E-learning hours included: 0.0

Adresy na platformie eNauczanie:
Chemia Organiczna 2021/2022 - Moodle ID: 18376
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18376
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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	90	5.0	80.0	175

Subject objectives

Student draws a correct structural formulas of organic compounds.

Student identifies separate class of organic compounds.

Student classifies organic reaction mechanisms.

Student identifies the nucleophilic and electrophilic reagents.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] has a basic knowledge of chemistry including general chemistry, inorganic, organic, physical, analytical, including the knowledge necessary to describe and understand the phenomena and chemical processes occurring in the environment; measurement and the determination of the parameters of these processes.	The student has basic knowledge in the field of organic chemistry. The student is able to use the knowledge learned to explain the basic mechanisms of chemical reactions: addition, elimination, substitution.	[SW1] Assessment of factual knowledge
[K6_U01] is able to obtain information from literature, databases and other sources, is able to integrate the information obtained, to make their interpretation, as well as draw conclusions and formulate and justify opinions, take part in the discussion	Student is able to: correctly draw patterns and name organic compounds in accordance with the IUPAC convention; correctly classify organic compounds; correctly classify organic compounds; define basic concepts of organic chemistry: chemical bonding, hybridization, polarity, acidity, alkalinity, electrophilicity, nucleophilicity; determine the isomerism of organic compounds; predict the direction of the chemical reaction.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information

Subject contents

1. Alkanes and cycloalkanes

2. Alkyl halides (reaction of nucleophilic substitution and elimination chirality)

3. Alkenes (isomers *cis-trans*, reaction of addition, Markovnikov's rule), alkynes, dienes

4. Aromatic compounds (reactions of electrophilic and nucleophilic substitution)

5. Alcohols, ethers and epoxides, phenols

6. Aldehydes and ketones

7. Carboxylic acids, hydroxy acids and halogenoacids, carboxylic acids derivatives

8. Reaction of codensation (aldol, Claisen, Dieckmann, Knoevenagle, Perkin)

9. Carbonic acid derivatives

10. Alkylamines and arylamines, diazonium salts

11. Heterocyclic compounds

12. Carbohydrates and nucleic acids

13. Amino acids and peptides

Prerequisites and co-requisites

Basic inorganic chemistry. Knowledge of the symbols of elements, the valence and ability to perform simple stoichiometric calculation.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
a written examination	100.0%	35.0%
Passing the basics of the laboratory.	100.0%	30.0%
Passing the tests.	100.0%	35.0%

Recommended reading	Basic literature	1. A. Kołodziejczyk, K. Dzierzbicka, *Podstawy chemii organicznej*, Tom 1 i 2, Wydawnictwo Politechniki Gdańskiej, Gdańsk, 2014. 2. K. Dzierzbicka, G. Cholewiński, J. Rachoń, *Chemia organiczna dla opornych*, Wydawnictwo Politechniki Gdańskiej, Gdańsk, 2014. 3. K. Dzierzbicka, G. Cholewiński, J. Rachoń, *Chemia organiczna dla zainteresowanych*, Wydawnictwo Politechniki Gdańskiej, Gdańsk, 2016. 4. R.T. Morrison, R.N. Boyd, *Chemia organiczna,* PWN, Warszawa 1998. 5. J. McMurry, *Chemia Organiczna,* PWN, Warszawa 2005. 6. J.D. Roberts, M.C. Caserio, *Chemia organiczna,* PWN, Warszawa 1969. 7. F. A. Carey, *Organic Chemistry*, McGraw-Hill, Inc. 2nd. ed., New York 1992. 8. T.W. Graham Salomons, *Fundamentals of organic chemistry*, John Wiley & Sons, New York, 1990. 9. P. Mastalerz, *Chemia Organiczna,* PWN, Warszawa 1986. 10. D.G. Morris, *Stereochemia*, PWN, Warszawa 2008. 11. A. Kołodziejczyk, *Naturalne związki organiczne*, PWN, Warszawa 2013.
	Supplementary literature	1. T.W. Green, P.G.M.Wuts, "Protective groups in organic synthesis. Third edition. John Wiley & Sons, 1999, Nowy Jork 2. Doonan S.: *Białka i peptydy*. PWN, Warszawa 2008. 3. Hepworth J.D., Waring D.R., Wargin M.J.: *Chemia związków aromatycznych*. PWN, Warszawa 2009. 4. *Organic Reaction Mechanisms*. ed. A.C. Knipe, J. Wiley & Sons, Ltd, Chichester 2008.
	eResources addresses	Chemia Organiczna 2021/2022 - Moodle ID: 18376 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18376 Chemia Organiczna 2021/2022 - Moodle ID: 18376 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18376

Example issues/ example questions/ tasks being completed	Present the mechanism of the *tert*-butyl chloride hydrolysis reaction. Draw a set for steam distillation and describe its individual elements.
Work placement	Not applicable