University of Gdańsk

Subject card

Subject name and code	Organic synthesis, PG_00081925						
Field of study	Chemistry						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
Education level	Bachelor's studies		Subject group	Optional subject group			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	2		Language of instruction	Polish			
Semester of study	4		ECTS credits	3.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Department of Organic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Aleksandra Walewska					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		8.0	22.0	75	
Subject objectives	Familiarize students with all issues listed in the curricular content of the exercises; Expand knowledge and practical skills in the preparation of organic compounds; Familiarize students with the specifics of laboratory work on a micro scale.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_U09] Is able to learn independently.	The student is able to describe the general characteristics of the synthesized compound and gives its most important physicochemical properties; The student can explain the principles of separation of mixtures of organic compounds using liquid chromatography techniques; The student determines the properties of solvents used in the process of obtaining and purifying preparations; Identifies and determines the purity of the synthesized compounds;	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[CHEML3_U07] Prepares documented elaboration on a specific problem in the field of selected chemical and physical issues.	The student, using the obtained experimental results, analyzes his own work, summarizes and draws conclusions	[SU2] presentation/project/paper/ report [SU7] entries and opinions in the internship diary
[CHEML3_U03] Selects the appropriate equipment and laboratory apparatus for conducting uncomplicated chemical experiments.	The student knows how to synthesize preparations on both a macro and microscopic scale; The student is able to characterize the relevant purification techniques and select the laboratory apparatus for the purification for a synthesized compound; Appreciates the impact of diligence on the quality of the obtained results;	[SU1] oral statement/conversation/ discussion [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[CHEML3_W12] Characterises the basic principles of health and safety at work in a chemical laboratory; knows and describes the hazards associated with working with hazardous substances, ways to counteract these hazards and rules of conduct during an accident.	The student respects the rules of safety and health regulations in the laboratory; Exercises caution in handling chemicals;	[SW5] implementation of a problem task
[CHEML3_K05] Observes established procedures in laboratory work and is responsible for the safety of her/his and others' work.	The student respects the rules of safety and health regulations in the laboratory; Organizes and demonstrates responsibility for his/her workstation; Is aware of the need to perform tasks in accordance with the relevant procedures;	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work

Subject contents

-Synthesis of organic compounds of different chemical nature;

-Separation and purification techniques for the obtained compounds;

- Purity analysis using chromatographic techniques such as thin-layer chromatography and high-performance liquid chromatography;

- Analysis of nuclear magnetic resonance spectra (for selected compounds).

Prerequisites and co-requisites

Completed organic chemistry course.

Knowledge of the main principles of health and safety in the organic chemistry laboratory.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
laboratory report	51.0%	40.0%
implementation of the experimental part	51.0%	60.0%

Recommended reading	Basic literature	1. Gawronski J., Gawronska K., Kacprzak K., Kwit M., Współczesna synteza organiczna, Wydawnictwo Naukowe PWN, Warszawa 2004; 2. Vogel A.I., Preparatyka organiczna, Wydawnictwo Naukowo-Techniczne, Warszawa 1984. 3. Tomasik P., Mechanizmy reakcji organicznych, Wydawnictwo Naukowe PWN, Warszawa1998. 4. Kupryszewski G., Sobocińska M., Walczyna R., Podstawy preparatyki organicznych związków chemicznych, Wydawnictwo Gdańskie, Gdańsk 1998.
	Supplementary literature	1. McMurry J., Chemia organiczna t.1-5, Wydawnictwo Naukowe PWN, Warszawa 2003; 2. Wade L.G., Simek J.W., Organic Chemistry, Pearson, 2017
	eResources addresses	
Example issues/ example questions/ tasks being completed	-How will you carry out the crystallization of a given (here name) compound? -When conducting extraction with an organic solvent from the aqueous phase, you lost track of which layer is the aqueous layer. How can this be easily resolved? Describe the mechanism for obtaining the synthesized compound.	
Work placement	Not applicable	

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