University of Gdańsk

Subject card

Subject name and code	Preparation and analysis of natural compounds, PG_00081924						
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	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	Laboratory of Medical Chemistry -> Department of Biomedical Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Ewa Wieczerzak					
	Teachers	dr Ewa Wieczerzak					
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	• to acquaint students with the issues listed in the content of the exercises syllabus; • to acquaint students with the specificity of laboratory work with biological material; • to broaden the knowledge and skills in the field of preparation and analysis of organic compounds						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_K02] Works individually demonstrating initiative and independence of activity and cooperates in a team fulfilling various roles in it.	works both independently, and in a small team	[SK8] observation of student's independent or team work
[CHEML3_K05] Observes established procedures in laboratory work and is responsible for the safety of her/his and others' work.	is aware of the responsibility for jointly performed tasks related to teamwork	[SK8] observation of student's independent or team work
[CHEML3_W04] Characterises the basic methods of chemical compound analysis.	characterizes the basic techniques of chemical extraction, fractional distillation, azeotropic distillation, and steam distillation, and determines their applicability in the preparation of natural compounds	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[CHEML3_U02] Performs analyses using experimental methods and draws conclusions based on them.	on the basis of the collected experimental results analyzes his own work, argues judgments, summarizes and draws conclusions	[SU2] presentation/project/paper/ report
[CHEML3_U01] Identifies, analyses and solves problems in the field of broadly understood chemistry on the basis of the acquired knowledge.	selects and uses appropriate techniques, equipment and laboratory apparatus to carry out specific experimental tasks in the field of basic organic preparation	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	gives the general characteristics of the obtained compound and provides the most important information about its natural sources and bioactive properties; describes the basic methods of its identification	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report

Subject contents

- preparation of organic compounds with specific fragrance properties used in cosmetics, perfumery and food industry;
- techniques of isolation, purification and analysis of the individual organic compounds from specific natural sources;
- isolation and determination of the content of essential oil in a selected biological material;
- identification of the main components of the essential oil using thin-layer chromatography;
- fragrance compositions - principles of design, preparation and their organoleptic evaluation.

Prerequisites and co-requisites

- completed course "Organic chemistry"
- knowledge of the most important reactions and properties of the basic groups of organic compounds
- knowledge of basic principles of safety and hygiene at work in the chemical laboratory
- the ability to work with basic chemical reagents using basic chemical equipment routinely used in a student laboratory

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
the presentation of the results obtained during the laboratory exercises in the form of a multimedia presentation	51.0%	15.0%
the presentations of the obtained results combined with their analysis, presented in the form of written reports	51.0%	85.0%

Recommended reading

Basic literature	• R. Kasprzykowska, A. S. Kołodziejczyk, K. Stachowiak, E. Jankowska, Preparatyka i analiza związków naturalnych, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2009 i 2014
Supplementary literature	• A. Kołodziejczyk, Naturalne związki organiczne, PWN, Warszawa 2005
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement	Not applicable

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