



Subject card

Subject name and code	Practical organic chemistry, PG_00069268						
Field of study	Praktyczna chemia organiczna						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Organic Chemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Sławomir Makowiec				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	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		5.0		25.0	75
Subject objectives	The aim of the course is to introduce students to issues related to the synthesis of organic compounds, their transformations, and properties, with particular emphasis on practical and industrial applications.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W01] recognizes problems of modern chemistry, including properties and obtaining chemical compounds, necessary for making calculations, including the dependence of the compound's structure and its reactivity		Students will gain knowledge of the acid-base properties of organic compounds. Students will gain knowledge of nucleophilicity and electrophilicity. Students will gain knowledge of the synthesis of basic organic compounds obtained on an industrial scale, such as: substrates for polymer synthesis, surfactants, plant protection products, dyes and pigments, adhesives, paints, and popular anti-inflammatory drugs.		[SW1] Ocena wiedzy faktograficznej [SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym		
	[K7_K01] is aware of the problems related to the profession of a chemist, is able to assess the effects of the activity performed		The student understands the problems associated with the synthesis of organic compounds on a large scale, understands and is able to prevent the negative effects of such activities.		[SK2] Ocena postępów pracy [SK5] Ocena umiejętności rozwiązywania problemów występujących w praktyce		
	[K7_U01] integrates and interprets information from literature, databases and other sources		The student is able to design a synthesis and determine the required substrates and process chemistry for obtaining basic organic compounds with industrial applications.		[SU2] Ocena umiejętności analizy informacji [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU4] Ocena umiejętności korzystania z metod i narzędzi		

Subject contents	Course content – lecture Course Content - Lecture 1. Review of the basics of organic chemistry. 2. Introduction to patenting using the example of nonsteroidal anti-inflammatory drugs. 3. Introduction to organic synthesis - retrosynthesis. 4. Fragrances 5. Dyes and pigments. 6. Surfactants. 7. Wood preservatives. 8. Synthesis and properties of fluoroalkanes. 9. Natural polymers. 10. Adhesives, paints, silicones 11. Substrates for polymer synthesis. 12. Herbicides and insecticides. 13. Top pharmaceutical products, fluoxetine and sildenafil.		
	Course content – laboratory KCHO: Synthesis of one compound in a team of 2-3 people. This compound will be the starting material for the preparation/modification of a polymer. KTP: Preparation or modification of a polymer based on a previously synthesized compound. KChiTMF and KBiM: Testing the properties of the resulting materials		
Prerequisites and co-requisites	Basic knowledge of organic chemistry, including the properties and reactivity of basic groups of organic compounds such as aliphatic and aromatic hydrocarbons, alkyl halides, alcohols, amines, aldehydes and ketones, phenols, carboxylic acids and their derivatives, and amino acids.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	20.0%
		60.0%	30.0%
		60.0%	50.0%
Recommended reading	Basic literature	Chemia organiczna T. Robert Thornton Morrison, Robert Neilson Boyd Chemia organiczna J. McMurry	
	Supplementary literature	Wprowadzenie do syntezy organicznej - Skarżewski Jacek	
	eResources addresses		
Example issues/ example questions/ tasks being completed	How are SDS, Freon R-12, and Ibuprofen obtained? Why is "droplet" glue unsuitable for bonding polyethylene? Which insecticides are toxic to mammals?		
Practical activities within the subject	Not applicable		

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