



Subject card

Subject name and code	ORGANIC CHEMISTRY, PG_00064411						
Field of study	Chemistry						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		exam		
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. inż. Teresa Olszewska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	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		40.0	75
Subject objectives							
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W02] classifies acquired information, assessing its usefulness in solving the posed problems concerning the synthesis and analysis of selected groups of compounds, determining their physical and chemical properties, making measurements and determining the parameters of chemical reactions and processes		The student is familiar with methods for the synthesis of amino acids and organic sulfur and phosphorus compounds, as well as their chemical transformations. The student understands the structures, reactivity, and applications of monosaccharides, disaccharides, and polysaccharides. In addition, the student knows methods for protecting hydroxyl, amino, and carboxyl functional groups and for separating racemic mixtures.		[SW1] Assessment of factual knowledge		
	[K6_U01] gathers information from literature, databases and other sources, interpreting, critically evaluating, summarising, formulating and justifying opinions, independently analyses and produces technical drawings with the use of computer assistance		Student is able to use literature databases to obtain information on a given topic and present their findings in an oral presentation. He is able to critically evaluate, select, and integrate key information from various sources related to the topic under discussion, as well as formulate and justify his own opinions.		[SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment		

Subject contents	Course content – lecture The course aims to familiarize students with the structure, reactivity, and methods of synthesis of amino acids, peptides, carbohydrates, and organic sulfur and phosphorus compounds; to discuss the reaction mechanisms characteristic of these classes of compounds and methods for the protection and deprotection of amino, carboxyl, and hydroxyl groups; and to present selected aspects of stereochemistry and methods for the resolution of racemic mixtures.		
	Course content – seminar The course aims to familiarize students with selected topics in organic chemistry, including: a) elements of stereochemistry, particularly the chirality of molecules lacking an asymmetric center; b) the synthesis and application of diazoalkanes, especially diazomethane, in organic synthesis; c) condensation reactions, including the Michael, Knoevenagel, Perkin, and benzoin condensations; d) the preparation and synthetic applications of enamines; e) rearrangement of organic compounds, including the benzylic, pinacol, deamination, Fries, benzidine, and Baeyer-Villiger rearrangements; and f) Mannich reactions. The course also aims to expand and consolidate students' knowledge of electrophilic and nucleophilic aromatic substitution reactions.		
Prerequisites and co-requisites	Structure of elements and their compounds, especially carbon; concepts of acids, bases, and salts; types of reactions; geometry of molecules Completion of parts I and II of the course.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture - test	60.0%	50.0%
	seminar - evaluation of the prepared presentation, activity during classes, colloquium checking knowledge	60.0%	50.0%
Recommended reading	Basic literature	R. T. Morrison, R. N. Boyd <i>Chemia organiczna</i> J. D Roberts, M. C. Caserio <i>Chemia organiczna</i> P. Mastalerz <i>Chemia organiczna</i> C. D. Nenitescu <i>Chemia organiczna</i> J. March <i>Chemia organiczna. Reakcje, mechanizmy, budowa.</i> M. Nogradi <i>Stereochemia, podstawy i zastosowania</i>	
	Supplementary literature	T. W. G. Solomons <i>Organic Chemistry</i> - 6th ed, John Wiley & Sons, Inc. New York, 1996 J. McMurry <i>Chemia Organiczna</i>, PWN Warszawa, 2002 F. A. Carey <i>Organic Chemistry</i> 4th ed, Mc Graw Hill Companies, Inc. USA, 2000 R. C. Fuson <i>Reakcje związków organicznych</i> G. Hallas <i>Stereochemia związków organicznych.</i>	
	eResources addresses		

Example issues/ example questions/ tasks being completed	1. Outline a Strecker synthesis of DL-alanine. 2. Write structural formulas for the (alfa)- and (beta)-methyl pyranosides formed by reaction of D-galactose with methanol in the presence of hydrogen chloride. 3. Give the products of periodic acid oxidation of each of the following. How many moles of reagent will be consumed per mole of substrate in each case? a) D-arabinose b) D-ribose c) methyl (<i>beta</i>)-D-glucopyranoside 4. What products would you expect to obtain from each of the following crossed Claisen condensations? a) ethyl propanoate + diethyl oxalate b) ethyl acetate + ethyl formate 5. Outline a synthesis of 4-nitroaniline from p-nitrotoluene. 6. Write the mechanism of the pinacol rearrangement of 1,2-cyclohexanediol.
Practical activities within the subject	Not applicable

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