



## Subject card

Subject name and code	Chemical transformations of crude oil, PG_00069029						
Field of study	Chemical Technology						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2027/2028		
Education level	first-cycle studies	Subject group			Optional subject group 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			assessment		
Conducting unit	Department of Organic Chemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Dariusz Witt				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	10.0	0.0	0.0	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	10.0		35.0		75
Subject objectives	Refinery processes as hydrocracking and isomerization, formation of side products, using sodium hydroxide involved in processes will be discussed. Catalytic transformation, production and deactivation of catalysts by poisons will be presented.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U08] Is able to select elements of automatic control systems for simple technological processes and use computer programs to control and optimize chemical processes.	understand technological processes. Technological processes can be verified in rational way by students.			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K6_W07] Has knowledge of raw materials and technologies in the chemical and polymer industries, also covering issues of corrosion and material protection.	is familiar with the properties of raw materials used in manufacturing processes and understands issues related to their stability and availability.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	[K6_K01] Is aware of the social role of a technical university graduate and understands the need to provide information about technical achievements and engineering activities to society, including through the media.	is able to present technological achievements in a clear and responsible manner, taking into account the needs of the audience.			[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	Course content – lecture Chemical transformations involved in the refinery plant: Hydro-processes HDS, HDN, HDO, hydrocracking isomerization. Side products formation involved in cracking and addition of alkenes. The ammonia washing, solubility of water in hydrocarbons, hydrolysis, using of sodium hydroxide oil hydrotreatment involved in refinery processes. The catalysts involved in refinery process, their formation mechanism of action and deactivation by poisons.						
	Course content – laboratory Oxidation and reduction of hydrocarbons. The TLC analysis of aromatic and aliphatic hydrocarbons.						
Prerequisites and co-requisites	Organic chemistry basic course						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory reports	60.0%	50.0%
	lecture tests	60.0%	50.0%
Recommended reading	Basic literature	Vademecum Rafinera Ropa Naftowa właściwości przetwarzanie produkty Jan Surygała	
	Supplementary literature	Organic chemistry Morrison Boyd	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Provide mechanism and conditions for hydrocracking process.</li> <li>2. What is the mechanism of isomerization for hydrocarbons and the properties of products.</li> <li>3. What kind of catalysts are applied in refinery plants and how they can be deactivated by poisons.</li> <li>4. What is solubility of water in hydrocarbons and its consequences for technological processes.</li> </ol>		
Practical activities within the subject	Not applicable		

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