GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Refinery technologies, PG_00072672		
Field of study	Chemical Technology, Chemistry, Biotechnology, Engineering and Technologies of Energy Carriers, Corrosion , Green Technologies, InfoBioChem		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
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 Corrosion and Electrochemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Juliusz Orlikowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	30.0	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 this course is to present the technologies of refinery and petrochemical processes implemented in Polish industrial plants. The course content will be based on actual process and design parameters. Practical knowledge will be presented to facilitate the acquisition of professional qualifications.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W05] recognises the key developments in research, apparatus and technology in technology and related fields	has knowledge of the design and operation of refinery facilities	[SW1] Assessment of factual knowledge
[K7_U05] uses instrumental methods applied in technology and related fields	is able to use the obtained knowledge about process technology, products and process parameters	[SU1] Assessment of task fulfilment

Subject contents

Course content – lecture
Principles of operation of basic refinery and petrochemical installations in Polish plants. Differences in the structure of installations in various plants in Poland. Implementation of technological processes, composition of raw materials, semi-finished products, and products. Basic technological parameters influencing the quality of the processes. Interconnection of individual installations. Implementation of the overall technological process, from blending crude oils to achieving standard-required product properties. Basic technological knowledge: reading PFD and P&D drawings, mass balances, and the construction of typical installation node components.

Course content – project
Process modeling using the AspenTech Hysys software package for typical refinery installations. Analysis of the impact of process parameters on product output. Energy management - energy flows, basic principles of heat exchanger design - Aspen Exchanger Design and Rating (EDR). Principles of digital twin operation in refinery technologies. Basics of production management in the event of failure. Principles of HAZOP procedures.

Prerequisites and co-requisites

Basic knowledge of chemical technology

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project - final exam	60.0%	50.0%
lecture - final exam	60.0%	50.0%

Recommended reading	Basic literature	PACZUSKI M. PRZEDLACKI M. LOREK A., TECHNOLOGIA PRODUKTÓW NAFTOWYCH, PW, 2015 Robert A. Meyers, Handbook of Petroleum Refining Processes, McGraw-Hill Education, 2016
	Supplementary literature	Michael Economides, Petroleum Production Systems, Pearson Education, 2012
	eResources addresses	
Example issues/ example questions/ tasks being completed	How is winter diesel fuel produced in a diesel fuel desulfurization plant? How are products blended to obtain E95 fuel? What is the impact of adding heavy crude oil during the blending process based on the DRW process model?	
Practical activites within the subject	Not applicable	

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