GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Separation Techniques in Industry , PG_00048869						
Field of study	Engineering and Technologies of Energy Carriers						
Date of commencement of studies	February 2022		Academic year of realisation of subject	2022/2023			
Education level	second-cycle studies		Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation			
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	5.0			
Learning profile	practical profile		Assessment form	exam			
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Grzegorz Boczkaj				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	15.0	0.0	75
	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	75		10.0	40.0		125
Subject objectives	The aim of the subject is to present issues related to classical and modern separation techniques used in industry.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U01	Ability to plan and conduct experiments, interpret the obtained results and develop conclusions.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
K7_W13	knowledge and understanding of phenomena and processes occurring in the life cycle of equipment for technological processes, knowledge and deep understanding of selected technological processes, types of reactors and auxiliary devices used.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
K7_W12	Knowledge of the basic processes and operations used in devices and facilities used for the separation of mixtures on a scale from analytical to process, knowledge and deep understanding - selected separation techniques and equipment used for them	
K7_U04	The ability to assess the usefulness and possibilities of using new achievements (techniques and technologies) of chemistry, physics, and chemical engineering and technology to achieve the set goal / solve a technological problem.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents

Fundamentals, principles of design and practical aspects of the following operations and separation processes: one-stage and two-stage filtration, centrifugation in filtration and sedimentation centrifuges, countercurrent absorption, co-current absorption, absorption batteries, multicomponent absorption, differential and equilibrium distillation, condensation, continuous and periodical rectification, single-stage and multistage co-current and counter-current liquid-liquid extraction, chromatography in gas-liquid / gas-solid / liquid-liquid / supercritical fluid-solid systems, ion exchange.

Prerequisites and co-requisites

Knowledge in the field of chemistry (physical, organic, inorganic) and physics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	60.0%	20.0%
Written exam.	60.0%	60.0%
Project	60.0%	20.0%

Recommended reading

Basic literature	M. Serwiński, Zasady inżynierii chemicznej, WNT 1976 J. Ciborowski, Inżynieria Chemiczna, PWT 1955 J. Ciborowski, Podstawy inżynierii chemicznej, WNT, 1965 I. D. Wilson, E. R. Adlard, M. Cooke, C. F. Poole, Encyclopedia of Separation Science, Wiley 2000.
Supplementary literature	Scientific publications on subject matter.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Theoretical basis, design principles and practical aspects of the separation operations and processes / techniques: one-stage and two-stage filtration, centrifugation in filtration and sedimentation centrifuges, countercurrent absorption, co-current absorption, absorption batteries, multi-component absorption, differential and equilibrium distillation, condensation, continuous and periodic rectification, one-stage and multi-stage co-and countercurrent liquid-liquid extraction, gas-liquid / gas-solid / liquid-liquid / supercritical fluid-solid chromatography, ion exchange.

Work placement

Not applicable