

Subject card

Subject name and code	Chemical technology, PG_00080726						
Field of study	Chemical Business						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	Bachelor's studies	Subject group			Obligatory subject group in the field of study		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish Polish		
Semester of study	4	ECTS credits			2.0		
Learning profile	academic	Assessment form			exam		
Conducting unit	Laboratory of Photocatalysis -> Department of Environmental Technology -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Anna Gołąbiewska				
	Teachers		prof. dr hab. inż. Adriana Zaleska-Medynska dr inż. Anna Malankowska dr inż. Anna Gołąbiewska				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	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		5.0		15.0	50
Subject objectives	<ul style="list-style-type: none"> • To gain knowledge in the field of unit operations. • To gain knowledge in the field of technological principles. • To gain knowledge in the field of the criteria of chemical process concept design. • To develop ability to prepare a schematic diagram. • To gain the knowledge about selected apparatus and devises used in the chemical and food industry. • To gain knowledge with selected technological processes in industry. 						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BCHINŻ_W07] Describes the construction and operating principles of basic scientific, technological and control-measuring apparatus.	Design the selection of basic devices and apparatus used in chemical and food industry	[SW4] test/exam - oral or written [SW5] implementation of a problem task
	[BCHINŻ_K02] Works individually demonstrating initiative and independence in actions, and effectively cooperates in a team, performing various roles in it.	Demonstrates creativity in individual and teamwork and keeps open to the suggestions of the teacher and other team members.	[SK8] observation of student's independent or team work
	[BCHINŻ_U02] Uses basic methods, techniques and tools in formulating and solving engineering tasks in the field of chemistry.	1. Establishes criteria for selecting the chemical concept. 2. Constructs a conceptual diagram of the technological process. 3. Classifies unit operations and processes. 4. Analyzes the mass and energy balance of the process. 5. Plans the selection of basic equipment for carrying out the technological process.	[SU4] test/exam - oral or written [SU5] implementation of a problem task
	[BCHINŻ_W06] Enumerates basic unit processes and describes issues in the field of technology and chemical engineering.	Classify operation units.	[SW4] test/exam - oral or written [SW5] implementation of a problem task
	[BCHINŻ_W05] Describes the life cycle of devices, facilities and technical systems as well as modern environment-friendly technical solutions.	Understands the concept of modern technological process design.	[SW5] implementation of a problem task
	[BCHINŻ_W10] Applies safety and hygiene principles when working on a test and measurement stand or in the field.	Student is aware of the value and responsibility for health and safety rules.	[SW5] implementation of a problem task
	[BCHINŻ_U06] Proposes and makes simple devices, operations or unit processes related to the implementation of the technological process used in the chemical industry, taking into account material and energy balances.	1. Determines the criteria for selecting the chemical concept. 2. Constructs the conceptual diagram of the technological process. 3. Classifies unit operations and processes. 4. Analyzes the mass and energy balance of the process. 5. Plans the selection of basic equipment for conducting the technological process.	[SU5] implementation of a problem task
[BCHINŻ_K04] Demonstrates responsibility for the safety of her/his own and others' work.	Student is aware of the value and responsibility for his/her own work results.	[SK8] observation of student's independent or team work	
Subject contents	Chemical technology as applied science. New technological process genesis. Chemical and technological concept of the processes. Process design and process scaling up. The principles of technological process. Process flow diagram. Basis unit operations. Crushing and milling. Screening and separation. Forming and extrusion. Distillation and rectification. Liquids homogenization. Mixing and agglomeration. Extraction. Heat exchange. Heating and cooling. Evaporation. Food freezing. Drying. Basic devices and apparatus in chemical and food industry. Examples of selected chemical process (case studies).		
Prerequisites and co-requisites	Prerequisites: Knowledge of the principles of general chemistry , math, Additional requirements: principles of the inorganic chemistry, organic chemistry and analytical chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		0.0%	0.0%
	exam	51.0%	100.0%

Recommended reading	Basic literature	<ul style="list-style-type: none"> • Warych J., Chemical and Process Equipment, Publishing House of the Warsaw University of Technology, Warsaw, 1996. • Szarawara J., Piotrowski J., Theoretical Fundamentals of Chemical Technology, WNT, Warsaw, 2010. • Lewicki P., Process Engineering and Equipment of the Food Industry, WNT, 2005. • Synoradzki L., Wisiański J., eds., Design of Technological Processes from Laboratory to Industrial Installation, Publishing House of the Wrocław University of Technology, 2006.
	Supplementary literature	<ul style="list-style-type: none"> • Schmidt-Szałowski K., Sentek J., Fundamentals of Chemical Technology. Organization of Production Processes, WPW, 2001. • Kucharski S., Głowiński J., eds., Examples and Problems for the Course: Fundamentals of Chemical Technology, Wrocław University of Technology, Wrocław, 2005.
	eResources addresses	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1.Explain the terms: chemical concept and technological concept of the process. 2. Discuss the phases and stages of technology design. 3. Discuss the principle of preparing schematic diagrams. 4. What is a technological diagram ? 	
Work placement	Not applicable	

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