

Subject card

Subject name and code	Chemical technology, PG_00081842						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's 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	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 Gołębiewska				
	Teachers						
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		40.0	75
Subject objectives	- 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 technologies in industry.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEML3_U02] Performs analyses using experimental methods and draws conclusions based on them.	Understands experimental methods of analysis and interprets results in order to formulate conclusions.	[SU4] test/exam - oral or written
	[CHEML3_W07] Understands and describes physicochemical patterns, phenomena and processes using the language of mathematics.	Explains physicochemical phenomena and processes using mathematical methods. Characterizes and describes physicochemical processes using mathematical relationships. Interprets physicochemical phenomena based on mathematical models.	[SW4] test/exam - oral or written
	[CHEML3_U05] Uses basic statistical methods and IT techniques to describe chemical processes and analyse experimental data.	Understands the application of statistical methods and information technology techniques in the description of chemical processes and the analysis of experimental data..	[SU4] test/exam - oral or written
	[CHEML3_K05] Observes established procedures in laboratory work and is responsible for the safety of her/his and others' work.	1. Student is aware of the value and responsibility for his/her own work results. 2. Student 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
	[CHEML3_K02] Works individually demonstrating initiative and independence of activity and cooperates in a team fulfilling various roles in it.	1. Student is aware of the value and responsibility for his/her own work results 1. 2. Student understand the needs of future education 3. Student demonstrates creativity in individual and teamwork and keeps open to the suggestions of the teacher and other team members	[SK5] implementation of a problem task
	[CHEML3_W10] Enumerates and describes the basic aspects of the construction, operation and use of measuring apparatus and equipment used in experimental works in the field of chemistry and related sciences.	Design the selection of basic devices and apparatus used in chemical industry.	[SW4] test/exam - oral or written [SW5] implementation of a problem task
	[CHEML3_U03] Selects the appropriate equipment and laboratory apparatus for conducting uncomplicated chemical experiments.	Understands the principles of selecting equipment and laboratory apparatus for conducting chemical experiments.	[SU4] test/exam - oral or written [SU5] implementation of a problem task
Subject contents	[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	1. The student correctly names chemical compounds in accordance with the applicable IUPAC nomenclature.	[SW4] test/exam - oral or written
	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
	Exam	51.0%	100.0%

Recommended reading	Basic literature	• Warych J., Chemical and Process Equipment, Publishing House of the Warsaw University of Technology, Warsaw, 1996. • J. Szarawara, J. Piotrowski, Theoretical Foundations of Chemical Technology, WNT, Warsaw, 2010. • P. Lewicki, Process Engineering and Equipment of the Food Industry, WNT, 2005. • L. Synoradzki, J. Wisiański, eds., Design of Technological Processes from Laboratory to Industrial Installation, Publishing House of the Wrocław University of Technology, 2006.
	Supplementary literature	• Schmidt-Szałowski K., Sentek J., Fundamentals of Chemical Technology. Organization of Production Processes, WPW, 2001. • S. Kucharski, J. Głowiński, 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	1. Discuss the principles of preparing conceptual diagrams. 2. What is a technological diagram? 3. What is a theoretical stage in the rectification process and discuss how the number of theoretical stages is determined. 4. Discuss what forces act on a particle in the processes of grinding/crushing solid materials.	
Work placement	Not applicable	

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