University of Gdańsk

Subject card

Subject name and code	Chemical technology, PG_00081842		
Field of study	Chemistry		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
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	3	Language of instruction	Polish 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 Gołąbiewska	
	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_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
[CHEML3_U03] Selects the appropriate equipment and laboratory apparatus for conducting uncomplicated chemical experiments.	Understands the principles of selecting appropriate laboratory equipment and apparatus for conducting chemical experiments.	[SU4] test/exam - oral or written [SU5] implementation of a problem task
[CHEML3_U05] Uses basic statistical methods and IT techniques to describe chemical processes and analyse experimental data.	Understands the application of statistical methods and computational techniques for describing chemical processes and analyzing experimental data.	[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_U02] Performs analyses using experimental methods and draws conclusions based on them.	Understands experimental methods of analysis and interprets results to formulate conclusions.	[SU4] test/exam - oral or written
[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 and food industry.	[SW4] test/exam - oral or written [SW5] implementation of a problem task
[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

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
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. • 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., Wisialski J., 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. 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	1. Discuss the principle of preparing conceptual diagrams. 2. What is a technological diagram? 3. What is a theoretical plate in the rectification process and discuss how the number of theoretical plates is determined. 4. Discuss the forces acting on a particle in the processes of grinding/crushing solid materials.	
Work placement	Not applicable	

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