University of Gdańsk

Subject card

Subject name and code	Diploma lecture - Waste conversion technologies, PG_00081856						
Field of study	Chemistry						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study Optional subject group			
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	2.0			
Learning profile	academic		Assessment form	credit			
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		15.0	50
Subject objectives	To acquaint students with waste processing technologies.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.	1. lists and defines the concepts of waste management. 2. lists and describes the processes used in the processing, use, and disposal of waste 3.describes the construction and operating principles of installations for physicochemical, biological, and thermal waste treatment 4.discusses the impact of waste production and processing technologies on the natural environment	[SU4] test/exam - oral or written
[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	It uses nomenclature consistent with IUPA	[SW4] test/exam - oral or written
[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.	- links the importance of the development of waste management technologies for the good condition of the natural environment and human health	[SK4] test/exam - oral or written
[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.	-is aware of the negative impact of waste on the environment. - connecting the importance of the development of waste management technologies for the good condition of the natural environment and human health	[SW4] test/exam - oral or written [SW5] implementation of a problem task

Subject contents

Definition and classification of waste.Types of waste processing methods and technologies: physico-chemical, biological and thermal. Basic processes, operations and equipment.Recycling technologies raw material, material and energy recycling.Municipal waste - characteristics and technological properties. Waste fermentation technologies and products.Storage of waste. Waste composting technologies.Organic waste. Raw materials for biological waste treatment processes.Characteristics, technologies and treatment of hazardous waste. Energy waste.Asbestos waste disposal methods.Industrial waste management. Mineral waste raw materialsand technologies for their development. Economic and environmental aspects of waste management.Case study: ScoobyCase study: Technology for processing photovoltaic waste.Case study: Recovery and recycling of polymer materials.Design thinking 1 technologies for processing selected waste (egg shells, coffee groundsDesign thinking 2 technologies for processing selected waste (egg shells, coffee grounds

Prerequisites and co-requisites

Entrance requirements:basics of general chemistryAdditional requirements:basics of chemical technology

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written test (gamification)	51.0%	100.0%

Recommended reading

Basic literature	1. Czesława Rosik-Dulewska, Podstawy gospodarki odpadami, PWN, Warszawa 2015. 2. Bernd Bilitewski, Georg Hardtle, Klaus Marek, Podręcznik gospodarki odpadami, teoria i praktyka, Wydawnictwo Seidel-Przewecki, 2006. 3. Zespół autorów pod redakcją dr hab. Krzysztofa Skalmowskiego, Poradnik gospodarowania odpadami, Wydawnictwo Verlag Dashofer, Warszawa 2014.
Supplementary literature	lack
eResources addresses	

Example issues/ example questions/ tasks being completed

1. Chemical recycling2. Waste classification3. Hazardous waste

Work placement

Not applicable

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