University of Gdańsk

Subject card

Subject name and code	Designing ecological materials and processes, PG_00171076						
Field of study	Environmental Protection						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
Education level	Bachelor's studies		Subject group	Optional subject group			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	2		Language of instruction	Polish			
Semester of study	4		ECTS credits	2.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Aleksandra Pieczyńska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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		10.0	20.0	60	
Subject objectives	The aim of the course is to prepare and carry out projects in groups of several people related to the topic of ecological materials or processes.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚL3_U02] Plans, selects appropriate research and measuring equipment and devices, performs physicochemical measurements and experiments; analyses the results and draws conclusions based on them.	The student plans research for the project.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report
[OŚL3_W02] Characterises the relationships and relationships between various disciplines of natural sciences and science, uses knowledge of mathematics, physics, chemistry and biology in the description of basic concepts, concepts and principles in environmental protection.	Students prepare and implement projects in the laboratory concerning issues related to broadly understood sustainable development.	[SW5] implementation of a problem task
[OŚL3_K03] Independently sets or implements a set action plan specifying priorities for its implementation; critically assesses its progress.	Students plan and carry out research as part of the project.	[SK1] oral statement/conversation/ discussion
[OŚL3_U01] Performs tasks under supervision and independently in the field of analysis of the natural environment and the functioning of natural and man-made natural systems.	The student carries out laboratory research related to the project topic under the supervision of the supervisor.	[SU8] observation of student's independent or team work
[OŚL3_U07] Uses basic laboratory techniques, conducts field research and performs qualitative and quantitative analyses and draws conclusions on this basis for practical purposes.	The student performs quality control analyses of manufactured materials or processes.	[SU8] observation of student's independent or team work
[OŚL3_U10] Participates in the analyses and evaluation of alternative solutions to environmental problems and selects methods and instruments to rationally resolve them.	The student analyzes the obtained results and proposes alternative solutions to the problems encountered.	[SU1] oral statement/conversation/ discussion
[OŚL3_W07] Explains the causal relationship between the content of specific pollutants and the state of the environment (including human health) and the occurrence of adverse phenomena on a local, regional and global scale.	The student analyses and explains the research results obtained within the project.	[SW5] implementation of a problem task

Subject contents

As part of the subject, students in groups of several people prepare projects whose topics are related to the preparation of new sustainable products or processes. Students in auditorium classes develop selected topics based on available literature, design the implementation of given materials/processes, prepare a report on the research carried out and finally present the results of the project in the form of a presentation and poster. As part of laboratory classes, students verify the proposed solutions in the project.Examples of topics:

- Production of activated carbon from coconut shells
- Purification of post-production water using advanced methods
- Production of biodiesel from waste oils
- Production of pots from biodegradable materials
- Production of biodegradable disposable tableware

Prerequisites and co-requisites

Basics of laboratory work

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Evaluation of the preparation, implementation and presentation of the project by the students	51.0%	50.0%
Evaluation of the preparation, implementation and presentation of the project by the teacher	51.0%	50.0%

Recommended reading	Basic literature	During classes, students independently search for and use scientific articles, books, and patents directly related to their project topic.
	Supplementary literature	During classes, students independently search for and use scientific articles, books, and patents directly related to their project topic.
	eResources addresses	
Example issues/ example questions/ tasks being completed	• Production of activated carbon from coconut shells • Purification of post-production water using advanced methods • Production of biodiesel from waste oils • Production of flowerpots from biodegradable materials • Production of biodegradable disposable tableware	
Work placement	Not applicable	

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