University of Gdańsk

Subject card

Subject name and code	Green Technologies, PG_00199725		
Field of study	Business and Environmental Technology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Master'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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	5.0
Learning profile	academic	Assessment form	exam
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Dagmara Jacewicz	
	Teachers	dr hab. Dagmara Jacewicz dr Joanna Drzeżdżon	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	45.0	0.0	105
	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	105	0.0	20.0	125

Subject objectives	The aim of the course is to familiarize students with the principles of green technology, with new reactions, alternative reagents and reaction media in technological processes, with unconventional methods of conducting reactions, as well as to test oral presentation skills.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BiTEMU2_W11] has an in-depth understanding of and applies safety and hygiene rules when working independently at a research or measurement station in the laboratory or in the field at an advanced level	The student knows and is able to apply the principles of occupational health and safety when working in a chemical laboratory. The student is able to work in a safe manner for all participants of the group of classes.	[SW2] presentation/project/paper/ report
	[BiTEMU2_U06] uses advanced methods, techniques, and tools to assess the quality of the environment and the effectiveness of the technological processes used	The student is able to apply advanced methods, techniques and tools to assess the quality of the environment and the effectiveness of the technological processes used.	[SU4] test/exam - oral or written
	[BiTEMU2_W01] provides an in-depth analysis of the relationship between economics and environmental technology, and their place within the social and natural sciences.	The student has extended knowledge in the field of economics and ecological technology as well as their historical development and importance for the progress of exact and natural sciences, knowledge. world and the development of humanity.	[SW4] test/exam - oral or written
	[BiTEMU2_W10] explains in detail the mechanisms of unit processes used in remediation and environmental protection as well as waste management methods	The student knows and is able to explain the basic mechanisms used in remediation and environmental protection and is able to describe waste management methods.	[SW4] test/exam - oral or written
	[BiTEMU2_U08] searches, selects and analyzes the literature on environmental sciences, including scientific journals and databases, reading and understanding scientific texts in the native language and English	The student independently searches for information in the literature and is then able to use this information, e.g. to correctly understand technological processes.	[SU2] presentation/project/paper/ report
	[BiTEMU2_W09] predicts the effects of human interference in the natural environment and analyzes the impact of human activity on the quality of the environment on a local, regional and global scale	The student is able to predict the effects of human interference on the environment and is also able to analyze the impact of human activity on the quality of the environment.	[SW4] test/exam - oral or written
	[BiTEMU2_K03] understands the need to properly set priorities, plan and organize tasks related to their implementation, as well as monitor and evaluate progress	The student is able to use chemical knowledge in correlation with other natural sciences to explain technological processes. The student has the ability to use the acquired knowledge to define priorities, e.g. to plan ways to counteract threats to human health and the natural environment.	[SK4] test/exam - oral or written
	[BiTEMU2_K02] understands the need to cooperate and work in a group, assuming responsible roles within it	The student takes responsibility for the work of the entire team and is also able to play various roles in the group when solving research problems and conducting experiments.	[SK2] presentation/project/paper/ report
	[BiTEMU2_U09] plans and performs research tasks in the field or laboratory and interprets research results on environmental protection issues	The student is able to plan and perform research tasks in the laboratory and is able to interpret the results of research in the field of environmental protection.	[SU2] presentation/project/paper/ report
	[BiTEMU2_U07] proposes processes and methods of water treatment, sewage and waste gas treatment, environmental remediation, and waste management used in environmental protection	The student can propose a method of water treatment, wastewater and waste gas treatment, environmental remediation and waste management that are used in environmental protection.	[SU4] test/exam - oral or written

Course outcome	Subject outcome	Method of verification
[BiTEMU2_U05] is able to give a presentation and independently prepare various specialized written works appropriate for the field studied or in the area on the border of various scientific disciplines, using theoretical approaches, collecting various sources of data, their description and interpretation, and drawing conclusions based on scientific literature and the results of own research work	The student is able to deliver an oral presentation and develop a technological process in the field of green technologies. Furthermore, the student is able to complete a project task involving the development of a selected technological process and consults its assumptions and progress with the course instructor during consultations and project sessions.	[SU2] presentation/project/paper/ report
[BiTEMU2_K07] demonstrates responsibility for the safety of one's own work and that of others, taking into account the risks resulting from the research techniques used, and creates conditions for safe work in the laboratory or in the field	The student is able to create safe working conditions and takes responsibility for the safety of his own work and that of other people in the team.	[SK4] test/exam - oral or written

Subject contents

The philosophy of green chemistry and the principles of green technology. The concept of sustainable development. Green technologies in organic synthesis. New reactions. Catalysis. Alternative reagents and reaction media. Supercritical fluids. Ionic and fluorine liquids. Reactions taking place without the use of solvents. New ways of conducting reactions. Electrochemical reactions, application of new electrode materials. Fuel cells. Photochemical reactions. Reactions supported by acoustic waves. Examples of eco-investments in the chemical and food industries, industrial and hazardous waste management technologies and carbon dioxide storage.

Prerequisites and co-requisites

No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written or test examination and z open questions	51.0%	55.0%
project task and presentation of its results	51.0%	45.0%

Recommended reading

Basic literature	Burczyk B., Green chemistry, Wroclaw University of Science and Technology Publishing House, Wrocław 2006 Lewandowski W.M., Pro-ecological sources of renewable energy, WNT, Warszawa 2001 Grodziuk P., Kowalczyk K., Kościk B., Biofuels, Wydawnictwo Wieś Jutra 2002
Supplementary literature	Materials prepared by the lecturer.
eResources addresses	

Example issues/ example questions/ tasks being completed

1. Innovative technologies for light cars, hybrid cars, electric cars.
2. Polymers of lactic acid (PLA), glycolic acid (PGA), copolymers of lactic and glycolic acid (PLGA) and other biodegradable polymers.
3. Green innovations in plant protection and agriculture.
4. Microplastics types and impact on the environment and living organisms.
5. Tire recycling.

Work placement

Not applicable

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