

Subject card

Subject name and code	Green Technologies, PG_00172672						
Field of study	Business and Environmental Technology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group				
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		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Laboratory of Catalytic Materials and Processes -> Department of Environmental Technology -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Joanna Drzeżdżon				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	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		20.0		0.0	50
Subject objectives	To familiarize students with the principles of green chemistry and technology. To acquire oral presentation skills.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BiTEMU2_U09] plans and performs research tasks in the field or laboratory and interprets research results on environmental protection issues	Can plan and perform research tasks in the laboratory and can interpret the results of environmental research.	[SU2] presentation/project/paper/report
	[BiTEMU2_W01] describes the relationship between economics and ecological technology, their place in the system of social and exact sciences	Lists examples of green technologies in the chemical, food industry and environmental protection.	[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	Evaluates selected technology in the context of its cost-effectiveness and invasiveness for humans and the environment.	[SU2] presentation/project/paper/report
	[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	He independently searches for information in the literature.	[SU2] presentation/project/paper/report
	[BiTEMU2_K02] is able to cooperate and work in a group, assuming responsible roles	He takes responsibility for the work of the whole team and also knows how to perform different roles in the group when solving research problems and conducting experiments.	[SK2] 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	Lists examples of green technologies in the chemical industry, food industry and environmental protection.	[SU2] presentation/project/paper/report
	[BiTEMU2_K03] is able to properly define priorities and plan and organize tasks related to their implementation, as well as monitor and evaluate progress	Maintains openness to suggestions from the instructor and fellow group members. Takes responsibility for the work of the whole team and also knows how to perform different roles in the group when solving research problems and conducting experiments.	[SK2] 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	He is aware of the dangers of environmental degradation and the need for changes in technology.	[SW2] presentation/project/paper/report
	[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 basic 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	Prepares and delivers a presentation. Evaluates selected technology in the context of its cost-effectiveness and invasiveness for humans and the environment.	[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	He takes responsibility for the work of the whole team and also knows how to perform different roles in the group when solving research problems and conducting experiments.	[SK2] presentation/project/paper/report
	[BiTEMU2_W10] explains the mechanisms of unit processes used in remediation and environmental protection as well as waste management methods	In a comprehensible manner, both in speech and writing, presents correct technological reasoning.	[SW2] presentation/project/paper/report

	Course outcome	Subject outcome	Method of verification
	[BiTEMU2_W11] applies safety and hygiene rules when working independently at a research or measurement station in the laboratory or in the field	Can plan and perform research tasks in the laboratory and can interpret the results of environmental research.	[SW2] presentation/project/paper/report
Subject contents	Principles of green chemistry and principles of green technology. Examples of eco-investments in the chemical and food industries, technologies for industrial waste management, hazardous waste management and carbon storage. Life cycle analysis of a product taking into account the principles of sustainable development and the principles of green chemistry. Evaluating the environmental impact of a product throughout its life cycle, from raw material extraction, production, distribution, use and disposal. Consideration of both the principle of minimizing negative environmental impact and the principles of green chemistry, which promote greener chemical methods.		
Prerequisites and co-requisites	Fundamentals of general chemistry.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	execution and presentation of a credit work - a multimedia presentation	51.0%	100.0%
Recommended reading	Basic literature	1. Burczyk B. Green Chemistry, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2006 2. Lewandowski W.M. Proekologiczne źródła energii odnawialnej, WNT Warszawa 2001 3. Gradziuk P., Kowalczyk K., Kościk B., Biopaliwa, Wieś Jutra Publishing House, 2002.	
	Supplementary literature	Paryjczak T., Lewicki A., Zaborski M., Green chemistry, Polish Academy of Sciences, Branch in Lodz, Lodz, 2005, ISBN 83-86492-34-1.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	List the principles of green chemistry.Describe process improvements to a selected product for compliance with green chemistry principles.Describe the importance of recycling in the life cycle of a product.		
Work placement	Not applicable		

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