University of Gdańsk

Subject card

Subject name and code	Prototyping and Elements of Technology Design, PG_00199741		
Field of study	Business and Environmental Technology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	6.0
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. Joanna Nadolna	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	15.0	30.0	45.0	0.0	90

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	90	0.0	60.0	150

Subject objectives

- Familiarizing students with intellectual property issues
- Introducing students to the process of writing a patent application, including patent claims
- Acquainting students with the concept of design thinking
- Teaching students how to present their own ideas
- Familiarizing students with elements of technology design

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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 is able to use scientific and patent databases available in both Polish and English languages.	[SU2] presentation/project/paper/ report
[BiTEMU2_K02] understands the need to cooperate and work in a group, assuming responsible roles within it	The student is capable of communicating, collaborating, and taking action within a group to achieve common goals. They can fulfill various roles depending on the team's needs, while maintaining responsibility for their tasks and supporting other group members.	[SK8] observation of student's independent or team work
[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 can give a presentation on a topic related to the developed chemical technology. The student is able to independently prepare a project concerning the production process of a selected product. The student can describe and interpret data sources and the results of their own research.	[SU2] presentation/project/paper/ report
[BiTEMU2_W02] distinguishes legal and administrative mechanisms and procedures in environmental protection and interprets it in depth manner	The student knows and understands national and international laws, regulations, and procedures related to environmental protection.	[SW2] 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 adheres to safety regulations, applies appropriate personal protective measures, and ensures that the work environment is safe for everyone present.	[SK8] observation of student's independent or team work
[BiTEMU2_W07] lists and describes the concepts and principles of protection of industrial property and copyright, the need to manage intellectual property resources and the principles of using patent information resources	The student has knowledge of key terms and rules regarding the protection of inventions, trademarks, industrial designs, and works protected by copyright. The student is also able to use patent databases.	[SW2] 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 is able to propose purification processes for water, wastewater, and gases for the proposed technology for obtaining a selected product.	[SU2] presentation/project/paper/ report
[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 all rules regarding safety and hygiene at work to ensure a safe and efficient working environment for themselves and others.	[SW1] oral statement/ conversation/discussion
[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 is able to analyze how economics influences the development and implementation of ecological technologies, and how these technologies impact the economy and society.	[SW2] presentation/project/paper/ report
[BiTEMU2_K03] understands the need to properly set priorities, plan and organize tasks related to their implementation, as well as monitor and evaluate progress	Demonstrates responsibility for the timely completion of tasks.	[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 plans to obtain and attempts to obtain the designed product on a laboratory scale. The student describes and interprets the obtained research results.	[SU2] presentation/project/paper/ report

<table>
<tr><td>Subject contents</td><td>• Patents and licenses (preparation of patent claims, patent search, patentability,application preparation in Poland and worldwide)
• Design thinking Prototyping and creative problem solving
• Teamwork, team management
• Elements of technology design (selection of chemical and technological concepts)
• Technology readiness assessment
• Presenting ideas</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of English language.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>project</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>A1. Used during classes: Unpublished materials provided to students during classes.

A2. Studied independently by the student: Patent descriptions of selected technologies and scientific publications. Materials will be sourced from online patent and publication databases.</td></tr>
<tr><td>Supplementary literature</td><td>no</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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