GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00071163		
Field of study	Recycling and Energy Recovery		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Building Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Szczepański	
	Teachers	dr inż. Marcin Szczepański	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	0.0	30.0	0.0	40
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	40	0.0	0.0	40

Subject objectives

The aim of the course is to introduce students to the fundamentals of artificial intelligence and its possible applications in the circular economy. Students become familiar with basic AI concepts, tools and methods, and learn how to consciously select them for simple analytical, decision-making and project-related problems connected with circular economy. An important part of the course is a practical approach to AI tools, automation, and the development of simple solutions supporting data analysis and decision-making processes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W05] analyzes practical issues in the field of recovery of raw materials and energy, using knowledge and understanding of: materials, devices and tools, processes and technologies.	-	[SW2] Assessment of knowledge contained in presentation
[K6_W06] integrates and extracts data from multiple sources to analyze complex engineering and technology problems.	-	[SW3] Assessment of knowledge contained in written work and projects
[K6_U06] uses information technology to improve data analysis and design support.	-	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
[K6_U07] creates solutions aimed at implementing legal regulations and managing raw materials/ waste on the premises of the company, as well as organizing work in accordance with legal standards and health and safety regulations.	-	[SU4] Assessment of ability to use methods and tools

<table>
<tr><td>Subject contents</td><td>Course content – lecture
AI basics, history and development, machine learning and generative AI, AI tools, data analysis, decision models, AI applications in circular economy, limitations and risks of implementation.
Course content – project
Practical use of AI tools to analyze a selected circular economy problem and develop a simple solution concept to support decision-making, analytical, or organizational processes. Work on LLM, gems, building agents, analyzing applications and models for engineering work (tools presented during the course: perplexity, chatgpt, cloud, gemini, n8n, make.com).</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>-</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>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>1. Russell S., Norvig P., Artificial Intelligence: A Modern Approach.
2. Mollick E., Co-Intelligence: Living and Working with AI.
3. Materiały dydaktyczne prowadzącego udostępniane w trakcie zajęć.
4. Dokumentacja i materiały pomocnicze dotyczące wybranych narzędzi AI wykorzystywanych podczas kursu.</td></tr><tr><td>Supplementary literature</td><td>-</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>-</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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