GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00069421		
Field of study	Projektowanie zrównoważone		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
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. Patryk Deniziak	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	30.0	0.0	45

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2483

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	45	5.0	50.0	100

Subject objectives

The aim of the course is to familiarise students with the principles of designing buildings in accordance with the concept of sustainable development, encompassing a balance between environmental, economic and social aspects throughout the entire life cycle of a building.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.	the student is able to use the knowledge acquired so far in a practical form to create a sustainable construction project.	[SU4] Ocena umiejętności korzystania z metod i narzędzi [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).	the student is able to select construction materials taking into account environmental, economic and social aspects.	[SW1] Ocena wiedzy faktograficznej
[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.	the student is able to consciously assess aspects of professional, ethical and social responsibility	[SK3] Ocena umiejętności organizacji pracy
[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint	the student is able to assess the impact of the designed structure on the natural environment and is able to estimate the generated carbon footprint.	[SU2] Ocena umiejętności analizy informacji [SU1] Ocena realizacji zadania
[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment	the student is able to independently determine the impact of the designed structure on the environment.	[SW1] Ocena wiedzy faktograficznej

<table>
<tr><td>Subject contents</td><td>Course content – lecture

Introduction to Sustainable Construction
Definitions and Sustainability Goals in Construction.
European Union Policy and Strategies for Sustainable Construction.
Life Cycle Assessment (LCA) of a Building.
Environmentally Friendly Materials and Technologies
Selection of Materials with a Low Carbon Footprint and Recyclability.
Use of Local and Renewable Materials.
Modern Technologies for Reducing Energy and Resource Consumption.
Energy Efficiency and Energy Efficiency of Buildings
Designing Building Envelopes with Low Thermal Transmission Coefficients.
Ventilation, Heating, and Cooling Systems in the Context of Energy Efficiency.
Passive and Zero Energy Buildings (nZEB).
Environmental Assessment and Certification of Buildings
Certification Systems: BREEAM, LEED, DGNB, WELL.
Criteria for Assessing Sustainable Buildings.
Social and Economic Aspects of Sustainable Construction
User Comfort, Health, and Indoor Environmental Quality.
Life Cycle Costs (LCC).
Sustainable urban planning and urban infrastructure.

Course content – project
Create a 3D model of the structure. Apply loads: dead load, snow, wind, and live load from photovoltaic panels. Generate load combinations for serviceability and ultimate limit state. Design the structure according to EC3 principles. Calculate the materials used and estimate the generated carbon footprint.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>The student knows the basic principles of designing building structures in accordance with the principles of European standards.</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>40.0%</td></tr>
<tr><td>Egzam</td><td>60.0%</td><td>60.0%</td></tr>
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<tr><td>Recommended reading</td><td>
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<tr><td>Basic literature</td><td>Budownictwo zrównoważone z elementami certyfikacji energetyczne. Błaszczyński Tomasz Ksit Barbara Dyzman Bogumił</td></tr>
<tr><td>Supplementary literature</td><td>Ekologia w budownictwie, Leonard Runkiewcz, Tomasz Błaszczyński</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<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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