GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Energy-efficient constructions, PG_00064747		
Field of study	Power Engineering, Power Engineering		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2026/2027
Education level	second-cycle 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	2.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Building Structures and Material Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Jarosław Florczuk	
	Teachers	dr inż. Jarosław Florczuk	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	15.0	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	10.0	10.0	50

Subject objectives

The aim of the course is to learn the actual passive and active techniques to reduce the building's energy demandand the methods of calculating the building's energy demand.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U03] identifies and formulates task specifications in the scope of energy systems, machines and devices, transmission grids, buildings and internal installations	The ability of building energy demand modeling.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[K7_W12] identifies and interprets the main developmental trends and significant new achievements in the field of engineering and technical sciences and disciplines relevant to the course of study	The student summarizes the latest technical systems and building technologies affecting the energy class of buildings..	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K7_U13] evaluates the feasibility and potential for utilizing new technical and technological achievements in accomplishing tasks characteristic for the field of study	The student knows techniques for assessing the energy efficiency of technical systems and building technologies.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

Subject contents

Course content – lecture

- Building energy classification
- Passive techniques for reducing energy demand
- Active techniques for reducing energy demand
- Passive buildings
- Energy+ buildings
- Net zero energy buildings
- Building energy demand modeling
- Heat accumulation methods

<table>
<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>Lecture exam</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Design of energy-efficient building</td><td>60.0%</td><td>50.0%</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Kowalczuk Z., (pod red.): Charakterystyka Energetyczna Budynków, Gdańsk, 2010.

Mikoś J.: Budownictwo ekologiczne. Wydawnictwo Politechniki Śląskiej, Gliwice, 1996.

Feist W., Munzenberg U, Thumulla J. Podstawy Budownictwa Pasywnego, 2009.</td></tr>
<tr><td>Supplementary literature</td><td>Klemm P.: Budownictwo Ogólne. Fizyka Budowli, Tom 2, Arkady Warszawa, 2006.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>• Energy classification of buildings
• Passive and active heating systems
• Building energy performance
• Energy efficiency of available building solutions
• Energy efficiency of the available technical systems</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.