



## Subject card

Subject name and code	Energy-efficient constructions, PG_00064747						
Field of study	Power Engineering						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2025/2026		
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 -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Jarosław Florczuk				
	Teachers						
Lesson types and methods of instruction	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 demand and the methods of calculating the building's energy demand.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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.		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		
	[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..		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[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.		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	<ul style="list-style-type: none"><li>• Building energy classification</li><li>• Passive techniques for reducing energy demand</li><li>• Active techniques for reducing energy demand</li><li>• Passive buildings</li><li>• Energy+ buildings</li><li>• Net zero energy buildings</li><li>• Building energy demand modeling</li><li>• Heat accumulation methods</li></ul>						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Design of energy-efficient building	60.0%	50.0%
	Lecture exam	60.0%	50.0%
Recommended reading	Basic literature	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.	
	Supplementary literature	Klemm P.: Budownictwo Ogólne. Fizyka Budowli, Tom 2, Arkady Warszawa, 2006.	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"><li>• Energy classification of buildings</li><li>• Passive and active heating systems</li><li>• Building energy performance</li><li>• Energy efficiency of available building solutions</li><li>• Energy efficiency of the available technical systems</li></ul>	
Work placement	Not applicable		

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