



Subject card

Subject name and code	Energy-efficient construction, PG_00072510						
Field of study	Civil Engineering						
Date of commencement of studies	October 2026		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		assessment		
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						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 9014 Budownictwo energooszczędne 2026/2027 (laboratorium) https://enauczanie.pg.edu.pl/2025/course/view.php?id=9014 Moodle ID: 9014 Budownictwo energooszczędne 2026/2027 (laboratorium) https://enauczanie.pg.edu.pl/2025/course/view.php?id=9014						
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		2.0		18.0	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_U02] interprets, in an in-depth way, phenomena and relationships between processes in the construction industry, using modern knowledge in line with the main trends in the development of scientific disciplines related to the field of study		The student summarizes the latest technical systems and building technologies affecting the energy class of buildings.		[SU2] Assessment of ability to analyse information		
	[K7_W03] demonstrates in-depth preparation in the application of analytical, numerical and experimental tools and methods to tasks in the construction industry		The student knows techniques for assessing the energy efficiency of technical systems and building technologies.		[SW2] Assessment of knowledge contained in presentation		
	[K7_K01] takes competent and ethical decisions, looking out for the public interest and upholding economic, social and environmental values		The student is able to select energy-efficient solutions regarding building structure and technical systems.		[SK5] Assessment of ability to solve problems that arise in practice [SK3] Assessment of ability to organize work [SK1] Assessment of group work skills		

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		
	Course content – laboratory		
	Building energy modeling.		
Prerequisites and co-requisites	Completed Building Physics I course		
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	• 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		
Practical activities within the subject	Not applicable		

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