



Subject card

Subject name and code		Energy-efficient constructions, PG_00057253						
Field of study		Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies		February 2022	Academic year of realisation of subject			2021/2022		
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			3.0		
Learning profile		general academic profile	Assessment form			exam		
Conducting unit		Department of Building Structures and Material Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)		Subject supervisor		dr inż. Jarosław Florczuk				
		Teachers		dr inż. Jarosław Florczuk dr hab. inż. Marek Krzaczek				
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						
		Technologie budownictwa efektywnego energetycznie 2022 - Moodle ID: 23618 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23618						
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		35.0		75
Subject objectives		The aim of the course is to learn the 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_U05] is able to integrate technical and economic analysis of the use of various energy technologies, including technologies using renewable energy sources and conventional and nuclear energy	The ability to analyze energy efficiency and economic analysis of available energy-saving building solutions.			[SU4] Assessment of ability to use methods and tools		
		[K7_W02] has extended and deepened knowledge of physics, chemistry, thermodynamics, fluid mechanics, material science, necessary to understand and describe basic thermal and flow phenomena occurring in and around power equipment and systems, transmission networks and internal installations	The ability of building energy demand modeling.			[SW3] Assessment of knowledge contained in written work and projects		
		[K7_W07] knows the environmental effects of energy technologies used; is familiar with the issues of effective energy management and use of renewable energy sources, has a broad and well-established knowledge of the processes of energy production and use	Ability to evaluate and select technical systems in terms of reducing the energy demand from non-renewable energy sources.			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	<p>Building energy classification.</p> <p>Passive techniques for reducing energy demand.</p> <p>Active techniques for reducing energy demand.</p> <p>Passive buildings.</p> <p>Energy+ buildings.</p> <p>Net zero energy buildings.</p> <p>Building energy demand modeling.</p> <p>Heat accumulation methods.</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 792 794 822">Subject passing criteria</th> <th data-bbox="799 792 1137 822">Passing threshold</th> <th data-bbox="1142 792 1481 822">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 826 794 855">Design of energy-efficient building</td> <td data-bbox="799 826 1137 855">60.0%</td> <td data-bbox="1142 826 1481 855">50.0%</td> </tr> <tr> <td data-bbox="456 860 794 889">Lecture exam</td> <td data-bbox="799 860 1137 889">60.0%</td> <td data-bbox="1142 860 1481 889">50.0%</td> </tr> </tbody> </table>			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%
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Design of energy-efficient building	60.0%	50.0%										
Lecture exam	60.0%	50.0%										
Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>Kowalczyk Z., (pod red.): Charakterystyka Energetyczna Budynków, Gdańsk, 2010.</p> <p>Mikoś J.: Budownictwo ekologiczne. Wydawnictwo Politechniki Śląskiej, Gliwice, 1996.</p> <p>Feist W., Munzenberg U, Thumulla J. Podstawy Budownictwa Pasywnego, 2009.</p> <p>Klemm P.: Budownictwo Ogólne. Fizyka Budowli, Tom 2, Arkady Warszawa, 2006.</p>										
Example issues/ example questions/ tasks being completed	<p>Energy classification of buildings.</p> <p>Passive and active heating systems.</p> <p>Building energy performance.</p> <p>Energy efficiency of available building solutions.</p> <p>Energy efficiency of the available technical systems.</p>											
Work placement	Not applicable											