



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 2023	Academic year of realisation of subject			2022/2023		
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					
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		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_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		
	[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_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			

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="456 792 794 815">Subject passing criteria</th> <th data-bbox="801 792 1139 815">Passing threshold</th> <th data-bbox="1145 792 1482 815">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 824 794 846">Lecture exam</td> <td data-bbox="801 824 1139 846">60.0%</td> <td data-bbox="1145 824 1482 846">50.0%</td> </tr> <tr> <td data-bbox="456 855 794 878">Design of energy-efficient building</td> <td data-bbox="801 855 1139 878">60.0%</td> <td data-bbox="1145 855 1482 878">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Lecture exam	60.0%	50.0%	Design of energy-efficient building	60.0%	50.0%
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Lecture exam	60.0%	50.0%										
Design of energy-efficient building	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> <p>Adresy na platformie eNauczenie: Technologie budownictwa efektywnego energetycznie 2023 - Moodle ID: 29907 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=29907</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											