GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Energy efficient urban structures, PG_00049239		
Field of study	Spatial Development		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Urban Design and Regional Planning -> Faculty of Architecture		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. arch. Gabriela Rembarz	
	Teachers	dr inż. arch. Gabriela Rembarz	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

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	15	1.0	9.0	25

Subject objectives

Acquainting with the structure of the energy sector, energy production technologies, methods of efficient energy consumption; processes of shaping energy policy, from the international level, through the national level, to the local level; the impact of policy and legislation on the national energy mix and the functioning of the energy sector; links between energy, economic, environmental and spatial planning at all levels of public administration; technologies of production, storage and efficiency of energy consumption and their impact on the quality of life in the city.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] has basic knowledge in the fields of science and scientific disciplines, relevant to spatial management, including history and theory of architecture, construction and related engineering industries	Students receive a knowledge of the energy aspects of spatial development.	[SW1] Assessment of factual knowledge
[K6_U05] correctly interprets natural phenomena, and when formulating and solving engineering tasks related to spatial management, notices their systemic and non-technical aspects related to the natural environment	Understanding the impact of energy on the global climate, the microclimate of cities and the health of residents. Knowledge of zero-emission energy technologies and the factors determining the energy performance of a building. Knowledge of connections between energy and spatial planning.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

1. Introduction to energy management - energy policy at the international, national, regional and local levels, environmental aspects, relations between the energy sector and space.

2. The structure of the energy sector - energy consumption in economic sectors, the structure of energy production, key entities of the energy sector and energy cooperatives

3. Energy technologies - review of renewable energy technologies, energy storage, the impact of energy infrastructure on space

4. Energy efficiency in construction - energy characteristics of buildings, standards of energy-efficient, low-energy and passive buildings, issues of energy poverty, the impact of urban structures on the energy consumption of buildings.

Prerequisites and co-requisites		
Assessment methods and criteria		

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	70.0%	100.0%

Recommended reading	Basic literature	1. Mostafavi, M., Doherty, G. 2016. Ecologocial Urbanism. Revised Edition. Lars Muller Publishers, Zurich. 2. Popkiewicz., M. 2015. Energy revolution. What for? Sonia Draga Publishing, Katowice. 3. Gasidło, K., Popczyk., J. 2008. Metropolitan areas and large cities and the problem of development and exploitation of renewable energy sources in Expertise for the Concept of the spatial management of the State 2008-2033. Vol. I. Ministry of Regional Development, Warsaw 4. Rembarz, G. i inni., 2018. Beauty and energy: contemporary model of constructing residential districts in Europe. Polish Academy of Sciences, National Spatial Development Committee, Warsaw. 5. ISOCARP, 2009. ISOCARP Review 05. Low Carbon Cities.
	Supplementary literature	1. Ko, Yekang. (2013). Urban form and residential energy use: A review of design principles and empirical findings. Journal of Planning Literature. 28. 327-351. 10.1177/0885412213491499. 2. National Action Plan for the increase in the number of buildings of low energy demand, of 22 June 2015. 3. Institute of Environmental Economics, 2018. Energy efficiency in Poland. Review of 2017. Institute of Environmental Economics, Kraków, 2018. 4. Bouzarowski, S. et al, 2019. Assessment of energy poverty in Poland using multidimensional indicator of energy poverty. Institute for Structural Research, Warsaw
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. What are the elements of the National Energy System? 2. What documents define the commune's policy in the field of energy management? Please list the document required by national law as well as the optional documents. What's the key difference between them? 3. What factors affect the energy consumption of a building? 4. What issues are included in the draft assumptions for the heat, electricity and gas fuel supply plan? 5. Please, list the competences of a local government in the field of energy management. 6. Please list the stages of the investment process, including the necessary administrative decisions.	
Work placement	Not applicable	