



Subject card

Subject name and code	, PG_00058650						
Field of study	Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject				2022/2023	
Education level	second-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery				at the university	
Year of study	2	Language of instruction				Polish	
Semester of study	3	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Environmental Engineering Technology -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Aneta Łuczkiwicz				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	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		0.0		0.0	30
Subject objectives	The energy transformation is the process of transitioning many sectors of the economy to RES. It is also an opportunity to improve Europe's energy security and economic competitiveness while combating climate change. However, this process entails significant changes. The aim of the course is to analyze the energy transformation in the context of: 1) economic - as new investment opportunities and new jobs; 2) industrial - as the modernization of the economy and the development of new, zero-emission technologies; 3) social - ensuring benefits for public health and climate protection.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_W08] as knowledge about development trends in the field of known technologies and non-technical aspects to solve simple engineering tasks in the field of power systems and equipment or transmission networks and internal installations		The student has knowledge of the energy transformation and non-technical aspects of solutions that are planned to be implemented			[SW1] Assessment of factual knowledge	
	[K7_K05] is aware of the impact of engineering activities on the environment		The student is aware of the impact of engineering activities in the RES sector on the environment			[SK2] Assessment of progress of work [SK1] Assessment of group work skills	
	[K7_K82] is equipped to participate actively in lectures, seminars and laboratory classes conducted in foreign language		The student is prepared in the field of energy sector to actively participate in lectures, seminars, laboratories conducted in a foreign language			[SK4] Assessment of communication skills, including language correctness [SK1] Assessment of group work skills	
	[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		The student knows the environmental issues related to RES and zero/low emission technologies, Student has well-established knowledge in the field of energy production and usage			[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge	

Subject contents	<p>The importance of the energy sector for the competitiveness of the economy and security.</p> <p>The European Green Deal and other activities for the transformation of the energy system in terms of improving energy security, competitiveness and economic attractiveness of Europe and combating climate change.</p> <p>Renewable and non-renewable energy sources (types and technological development of RES; issues of alternative methods of storing renewable energy; solutions improving the efficiency of renewable energy conversion; integration of alternative technologies for generating energy from RES).</p> <p>RES development potential in Poland; Polish energy mix versus EU countries.</p> <p>Economic aspects of RES development (e.g. value of investments in renewable energy sources, impact on employment and GDP).</p> <p>Environmental aspects of energy transformation.</p> <p>Social aspects of RES investments (the level of social acceptance for RES investments, criticism and threats resulting from the implementation of the energy transformation, shaping the labor market).</p> <p>Technological innovations and green technology startups - panel discussion.</p> <p>The future of the energy sector in Poland and in the world - panel discussion.</p>											
Prerequisites and co-requisites	Student has to be familiar with: physics of energy conversion, simple heat balance calculations, fundamental principles of fluid dynamics and thermodynamics											
Assessment methods and criteria	<table border="1" data-bbox="448 1001 1487 1106"> <thead> <tr> <th data-bbox="448 1001 794 1032">Subject passing criteria</th> <th data-bbox="794 1001 1141 1032">Passing threshold</th> <th data-bbox="1141 1001 1487 1032">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 1032 794 1064">panel discussion</td> <td data-bbox="794 1032 1141 1064">60.0%</td> <td data-bbox="1141 1032 1487 1064">40.0%</td> </tr> <tr> <td data-bbox="448 1064 794 1106">colloquium</td> <td data-bbox="794 1064 1141 1106">60.0%</td> <td data-bbox="1141 1064 1487 1106">60.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	panel discussion	60.0%	40.0%	colloquium	60.0%	60.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>Polityka energetyczna Polski do roku 2030. Prognoza zapotrzebowania na paliwa i energię do 2030 roku. Załącznik 2. do Polityki energetycznej polski do 2030 roku</p> <p>https://www.kape.gov.pl/page/homepage - strona internetowa Krajowej Agencji Poszanowania Energii</p> <p>http://isap.sejm.gov.pl/ - strona internetowa ISAP - Internetowy System Aktów Prawnych Sejmu RP</p> <p>https://www.ure.gov.pl/ - strona internetowa Urzędu Regulacji Energetyk</p>										
Example issues/ example questions/ tasks being completed	-											
Work placement	Not applicable											