



Subject card

Subject name and code	, PG_00060057						
Field of study	Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
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		English		
Semester of study	3		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Sanitary Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Filip Gamoń				
	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		25.0	55
Subject objectives	The aim of the subject is to analyze legal norms related to the energy sector, mainly renewable energy sources. Discussing various renewable energy technologies and their impact on the environment. Discussing the possibilities of recovering resources from waste generated as a result of the exploitation of renewable energy technologies in the context of a closed-loop economy.						
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		The student is familiar with the technologies of the energy industry using fossil fuels and renewable sources, and is able to conduct techno-economic analysis of selected technologies.		[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation		
	[K7_K82] is equipped to participate actively in lectures, seminars and laboratory classes conducted in foreign language		The student has the English language skills to actively participate.		[SK4] Assessment of communication skills, including language correctness [SK2] Assessment of progress of work		
	[K7_K05] is aware of the impact of engineering activities on the environment		The student is able to assess the impact of renewable energy technologies on the environment.		[SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work		
	[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 renewable energy technologies and can assess their suitability depending on the conditions of individual markets		[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		
Subject contents	Detailed discussion of renewable energy sources, with particular emphasis on those that have potential for use in Poland. Discussion of legal norms concerning renewable energy. General overview of technologies and materials used in renewable energy. Detailed discussion of the possibilities of resource recovery from various renewable energy sources, along with the methods that can be applied for their recovery. Discussion of Poland's energy policy assumptions until 2040.						
Prerequisites and co-requisites	The student should have basic knowledge of the types of renewable energy sources and their potential utilization in the energy sector.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	100.0%
Recommended reading	Basic literature	Ryszard Tytko "Renewable energy devices and systems. XVI edition. ECO INVESTMENT SP Z O.O., 2023Nick Jelley "Short course. Renewable energy". PWN Scientific Publishers, 2022Izabela Filipiak, Władysław Mielczarski "Energetyka w okresie transformacji" Wydawnictwo Naukowe PWN, Kraków 2023Document Energy Policy of Poland 2040Scientific articles	
	Supplementary literature	-	
	eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37335 - Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	To introduce Students to renewable energy sources, the technology used to produce them and how to dispose of the materials. Special attention will be paid to the disposal of wind turbines, with a discussion of physical and chemical methods of their disposal. Current investments that are being carried out in Poland in the context of renewable energy sources will be discussed		
Work placement	Not applicable		