



Subject card

Subject name and code	, PG_00060057						
Field of study	Environmental Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject			2023/2024	
Education level	second-cycle studies		Subject group			Obligatory subject group in the field of study Optional subject group 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			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_K02] understands the need to formulate and communicate to the public information and opinions on the achievements in the environmental engineering and other aspects of the engineering activity in the sanitary sector; is aware of the importance and understands non-technical aspects and effects of engineering activities; strives to convey such information and opinions in a universally understandable manner, presenting various points of view	The student is able to assess the risks when implementing engineering and implement appropriate rules of safety.			[SK1] Assessment of group work skills [SK2] Assessment of progress of work		
	[K7_W08] has knowledge necessary to understand the social, economic, legal and other non-technical determinants of engineering activities and their incorporation in engineering practice	The student has an in-depth, structured and theoretically supported theoretical knowledge related to renewable energy, is able to assess its legitimacy, as well as its impact on the environment.			[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	<p>Ryszard Tytko "Renewable energy devices and systems. XVI edition. ECO INVESTMENT SP Z O.O., 2023 Nick Jelley "Short course. Renewable energy". PWN Scientific Publishers, 2022 Izabela Filipiak, Władysław Mielczarski "Energetyka w okresie transformacji" Wydawnictwo Naukowe PWN, Kraków 2023 Document Energy Policy of Poland 2040 Scientific articles</p>	
	Supplementary literature	-	
	eResources addresses	Adresy na platformie eNauczenie: Wykład specjalistyczny - Moodle ID: 37335 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37335	
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		