



Subject card

Subject name and code	Environmental Protection in Energetics, PG_00049751						
Field of study	Power Engineering, Power Engineering						
Date of commencement of studies	October 2023	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	1	Language of instruction			English		
Semester of study	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Faculty of Ocean Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Roman Liberacki					
	Teachers	dr inż. Roman Liberacki dr inż. Blanka Jakubowska dr inż. Bartosz Dawidowicz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	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	3.0		42.0	75	
Subject objectives	To acquaint students with the environmental aspects of energy production and processing.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W17] has an elementary knowledge on land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, student knows the principles and organization of sustainable resource management within a circular economy	He knows the consequences of deforestation, drying out and polluting the land	[SW1] Assessment of factual knowledge
	[K6_K04] is able to formulate opinions on technical and technological processes in energy and sanitary engineering	The student is able to describe unconventional energy sources	[SK2] Assessment of progress of work
	[K6_U09] knows and applies the basic provisions of construction law, water law and environmental law; can determine the impact of construction investments on the environment	58 / 5000 Wyniki tłumaczenia The student knows the legal requirements related to environmental protection	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U10] can use correctly selected methods and measuring devices for determination of basic parameters during the water treatment process and wastewater treatment control; can perform basic laboratory tests leading to the assessment of water quality, pollutant load in wastewater	The student knows the ecological aspects of energy production and conversion.	[SU2] Assessment of ability to analyse information
[K6_U12] can correctly choose tools (analytical or numerical) to solve engineering problems filtration processes, and data analysis; is able to use photogrammetric and remote sensing tools in engineering tasks in the field of geodetic techniques and metrology	He knows the methods of measuring air pollution	[SU4] Assessment of ability to use methods and tools	
Subject contents	The principle of sustainable development. Non-renewable and renewable energy sources. Environmental aspects of the use of different energy sources. Atmospheric pollution. Methods of reducing the emission of pollutants into the atmosphere. Waste and hazardous waste. Water and Wastewater. Legal aspects of environmental protection.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written test	50.0%	50.0%
	Reports from the laboratory exercises	100.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. A. Farmer. Handbook of Environmental Protection and Enforcement. Principles and Practice. Earthscan. London. 2007</li> <li>2. D.H.F. Liu, B.G. Liptak, P.A. Bouis. Environmental Engineers Handbook. Lewis Publishers. 1997.</li> <li>3. F.R. Spellman. Handbook of Environmental Engineering. CRC Press. 2015.</li> <li>4. Paul Breeze Power Generation Technologies. Elsevier 2005</li> </ol>	
	Supplementary literature	Web sites: <a href="http://www.mos.gov.pl">www.mos.gov.pl</a> , <a href="http://www.ure.gov.pl">www.ure.gov.pl</a> , <a href="http://www.cire.pl">www.cire.pl</a> , <a href="http://www.eea.europa.eu">www.eea.europa.eu</a> , <a href="http://www.iea.org">www.iea.org</a> .	
	eResources addresses	Adresy na platformie eNauczanie: Environmental Protection in Energetics, L, E, sem.1, zimowy 23/24 - Moodle ID: 31608 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31608">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31608</a> Environmental Protection in Energetics, L, E, sem.1, zimowy 23/24 - Moodle ID: 31608 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31608">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31608</a>	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. What is the principle of sustainable development?</li> <li>2. List the most important pollutants emitted into the atmosphere by burning fossil fuels.</li> <li>3. Give some examples of techniques used in the clean-burning boilers.</li> <li>4. What is a trading system for CO2 emissions</li> </ol>		
Work placement	Not applicable		