



## Subject card

Subject name and code	Environmental management and ecology, PG_00040195						
Field of study	Mechanical Engineering, Mechanical Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	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	3	Language of instruction			English		
Semester of study	6	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Systemów i Urządzeń Energetyki Ciepłej -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Paweł Szymański				
	Teachers		dr inż. Paweł Szymański				
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	6.0		14.0	50	
Subject objectives	To acquaint students with multiple the environmental aspects of industrial processes and green technologies.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_K02] understands ex-technical aspects of the activities included in the profession of a mechanical engineer, among others its social impact and influence on the condition of an environment; is aware of the responsibility connected with the decisions made in connection with engineering activity	Student lists pollutants emitted into the atmosphere. Student defines and distinguishes between waste and hazardous waste. Student lists basic legislation on environmental protection.			[SK5] Assessment of ability to solve problems that arise in practice		
	K6_W12	The student has the basic knowledge necessary to understand the non-technical conditions of engineering activities, in particular environmental protection activities.			[SW3] Assessment of knowledge contained in written work and projects		
	K6_U11	The student is able to perform basic analyses related to the estimation of environmental hazards and pollutions.			[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
Subject contents	<ul style="list-style-type: none"> <li>Principles of Sustainable Development</li> <li>Principles of Ecology</li> <li>Principles of Environmental Protection</li> <li>Effect of Global Warming on Climate Change</li> <li>Pollution and Causes of Climate Change</li> <li>Renewable Energy Resources</li> <li>Effect Of Using Fossil Fuels On Climate Change</li> <li>Hydropower, Wind power, Geothermal Energy, Solar Power, Biomass, Nuclear energy</li> <li>International Environmental Agreements/Convection</li> </ul>						

Prerequisites and co-requisites	General and basic technical knowledge		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	oral exam	56.0%	80.0%
	lab report	56.0%	20.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. 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> </ol>	
	Supplementary literature	<ul style="list-style-type: none"> <li>• <a href="http://www.mos.gov.pl">www.mos.gov.pl</a></li> <li>• <a href="http://www.ure.gov.pl">www.ure.gov.pl</a></li> <li>• <a href="http://www.cire.pl">www.cire.pl</a></li> <li>• <a href="http://www.eea.europa.eu">www.eea.europa.eu</a></li> <li>• <a href="http://www.iea.org">www.iea.org</a></li> </ul>	
	eResources addresses		
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 CO<sub>2</sub> emissions</li> </ol>		
Work placement	Not applicable		