



## Subject card

Subject name and code	Management and Environmental Protection, PG_00055477						
Field of study	Mechatronics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Blanka Jakubowska					
	Teachers						
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		1.0		19.0	50
Subject objectives	The aim of this course is to make students familiarize with the notions: causes and effects of environmental degradation,  processes of purification and restoration of environmental resources, and familiarization with the current legal status, models and concepts of environmental management and the structure of environmental management in Poland.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W12] has basic knowledge on management and knowledge essential for understanding non-technical conditions of engineering activities; knows basic rules of industrial safety and intellectual property rights; is able to make use of patent databases	The student knows the concept of the environmental management system model and the types of environmental protection processes. The student knows the basic principles of environmental impact assessment and the elements of safety and industrial risk management. The student knows and follows the principles of occupational health and safety.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_K02] is aware of social role of the technical university alumni, the importance of professional attitudes, obeying ethic rules with respect to diverse point of views and cultures, understands the need for permanent self-learning	The student is aware of the importance of pro-environmental activities. The student is able to make environmentally friendly decisions. The student understands the need for ecological education of the society in the field of environmental impact of decisions made. It endeavors to provide such information and opinions in a generally comprehensible manner, with the justification of different points of view. The student is aware of professional conduct and compliance with professional ethics.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice
[K6_U10] is able - while formulating and solving mechatronic engineering tasks - to notice their systemwide and non-technical aspects	The student is able to analyze the operation of devices used in the processes of cleaning and restoration of environmental resources. The student connects economic, social and ecological issues with the issues of environmental protection.	[SU1] Assessment of task fulfilment	
Subject contents	Lecture: Causes and effects of environmental degradation. Methods of purification and restoring environmental resources. The concept of sustainable development. Activities in the field of environmental protection. Industrial ecology. Models and definitions of environmental management and environmental management. Environmental management systems. Ecological and legal aspects of management systems. Best practices in technique and technologies. Primary and secondary methods for the elimination or reduction of emissions harmful to the environment. Laboratory: Various techniques of environmental engineering - sorting materials, mixing, separating pollutants. Economic issues related to the valuation of the use of the environment.		
Prerequisites and co-requisites	Fundamentals of physics, chemistry and fluid mechanics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory	56.0%	50.0%
	lecture	56.0%	50.0%

Recommended reading	Basic literature	<p>R. Zarzycki, M. Imbierowicz, M. Stelmachowski, "Wprowadzenie do inżynierii i ochrony środowiska. Ochrona środowiska naturalnego", Wydawnictwa Naukowo-Techniczne, Warszawa, 2007</p> <p>B. Poskrobko, "Zarządzanie Środowiskiem", Polskie Wydawnictwo Ekonomiczne, Warszawa, 1998</p> <p>"Ekonomia i Środowisko", Czasopismo Europejskiego Stowarzyszenia Ekonomistów Środowiska i Zasobów Naturalnych, 4 (47), 2013</p> <p>G. Dobrzański, B. M. Dobrzańska, D. Kielczewski, " Ochrona środowiska przyrodniczego", Wydawnictwo Ekonomia i Środowisko, Białystok, 1997</p> <p>J. Kuckowski, D. Laudyn, M. Przekwas, " Energetyka a ochrona środowiska", Wydawnictwa Naukowo-Techniczne, Warszawa, 1993</p>
	Supplementary literature	-
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Explain what a product life cycle analysis is all about, which is used as an indicator in the ISO 14000 series standard</p> <p>List the motives and briefly describe the concepts of environmental protection</p>	
Work placement	Not applicable	