



Subject card

Subject name and code	Environmental management and ecology, PG_00040195						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2025/2026		
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	Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Paweł Szymański					
	Teachers	dr inż. Paweł Szymański					
Lesson types	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] possesses basic knowledge necessary to understand the ex-technical conditions of engineering activity, possesses basic knowledge on management, including quality management and running commercial enterprise, within the range of protection of intellectual property and patent law; knows general principles of creating and developing forms of individual entrepreneurship and basic HSE rules applicable to machine industry	The student has basic knowledge of environmental management and ecology necessary to understand the non-technical aspects of engineering activity. They are familiar with the fundamental principles of sustainable development, environmental protection, and the impact of industrial activity on ecosystems. The student understands the importance of quality management, occupational safety, and environmental responsibility in engineering and business practice.	[SW1] Assessment of factual knowledge
	K6_U11	The student is able to analyze the environmental impact of devices and technical systems and compare selected design solutions using functional, safety, environmental, economic, and legal criteria. They can assess their compliance with the basic principles of environmental protection and sustainable development. The student is able to identify more environmentally friendly solutions and justify their selection.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
Subject contents	Course content – lecture		
	<ul style="list-style-type: none"> • Principles of Sustainable Development • Principles of Ecology • Principles of Environmental Protection • Effect of Global Warming on Climate Change • Pollution and Causes of Climate Change • Renewable Energy Resources • Effect Of Using Fossil Fuels On Climate Change • Hydro power, Wind power, Geothermal Energy, Solar Power, Biomass, Nuclear energy • International Environmental Agreements/Convection 		
	Course content – laboratory		
	<ul style="list-style-type: none"> • Principles of Sustainable Development • Principles of Ecology • Principles of Environmental Protection • Effect of Global Warming on Climate Change • Pollution and Causes of Climate Change • Renewable Energy Resources • Effect Of Using Fossil Fuels On Climate Change • Hydro power, Wind power, Geothermal Energy, Solar Power, Biomass, Nuclear energy • International Environmental Agreements/Convection 		
Prerequisites and co-requisites	General and basic technical knowledge		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	every week reports	56.0%	100.0%
Recommended reading	Basic literature		
	<ol style="list-style-type: none"> 1. 1. A. Farmer. Handbook of Environmental Protection and Enforcement. Principles and Practice. Earthscan. London. 2007 2. D.H.F. Liu, B.G. Liptak, P.A. Bouis. Environmental Engineers Handbook. Lewis Publishers. 1997. 3. F.R. Spellman. Handbook of Environmental Engineering. CRC Press. 2015. 		

	Supplementary literature	www.mos.gov.plwww.ure.gov.plwww.cire.plwww.eea.europa.euwww.iea
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>1. What is the principle of sustainable development? 2. List the most important pollutants emitted into the atmosphere by burning fossil fuels. 3. Give some examples of techniques used in the clean-burning boilers. 4. What is a trading system for CO2 emissions</p>	
Practical activities within the subject	Not applicable	

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