



Subject card

Subject name and code	Environment protection, PG_00020943						
Field of study	Nanotechnology						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2029/2030	
Education level	first-cycle studies	Subject group				Obligatory subject group in the field of study Humanistic-social subject group	
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				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Division of Electrochemistry and Surface Physical Chemistry -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	1.0		9.0	25	
Subject objectives	Make students aware of the impact of human productive activity on the natural environment. Overview of the principles of sustainable development. Presentation of the role of engineers in developing tools and technologies allowing for more effective environment protection.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_K71] is conscious of the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment	the student understands the role of engineering and modern technologies to ensure sustainable development			[SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	<p>Course content – lecture</p> <p>Human impact on the environment. Types and sources of water, soil and air pollution. Circulation of resources in the environment. Global, local and point environmental threats. Evolution of environmental protection. Environmental protection strategies: conservative, technological and planning. The idea of sustainable development. The role of material engineers in shaping changes, designing materials and technological processes. Available sources of energy, their harmfulness to the natural environment, materials and technologies related to obtaining energy, energy efficiency of processes. Maximizing the efficiency of using energy, time, mass and space. Principles of green chemistry, toxicity and biodegradability of materials, Protection against corrosion. Circular economy. Recycling. Process automation (drivers, management systems, monitoring).</p>						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	oral presentation	60.0%			40.0%		
	Writing test	60.0%			60.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. J. Krystek, Ochrona środowiska dla inżynierów, PWN 2018 2. M. Popkiewicz i inni, Nauka o klimacie, Wydawnictwo Nieoczywiste, 2019 3. W. Adamczyk; Ekologia wyrobów; PWE 2004 4. Z. Kowalski, J. Kulczyńska, M. Góralczyk; Ekologiczna ocena cyklu życia procesów wytwórczych (LCA), PWN 2007 5. K. Małachowski; Gospodarka a środowisko i ekologia, CeDeWu, 2011 6. Z. Wnuk; Ekologia i ochrona środowiska. Wybrane zagadnienia., Wydawnictwo Uniwersytetu Rzeszowskiego, 2011
	Supplementary literature	JCR articles
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>The life cycle of the selected product.</p> <p>Types of impacts on the environment at the stage of manufacture of the selected material.</p> <p>The use of ecodesign principles on the example of the selected product.</p>	
Practical activities within the subject	Not applicable	

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