GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Environmental Protection, PG_00039776		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021
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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Anna Zielińska-Jurek	
	Teachers	dr hab. inż. Anna Zielińska-Jurek	

Lesson types and methods of instruction

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

Adresy na platformie eNauczanie:

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	12.0	23.0	50

Subject objectives

Basic knowledge of environmental pollutant of water treatment technology,wastewater, air purification.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_K01	Student is able to define basic concepts in the field of environmental protection, search for information on the toxicity of substances and their impact on living organisms.	[SK5] Assessment of ability to solve problems that arise in practice
K6_W09	Student classifies types and sources impurities Describes the types of toxicity and methods of absorption of poisons	[SW1] Assessment of factual knowledge
K6_U03	Describes the basic technologies used for air treatment, water and wastewater. Describes industrial ecosystems	[SU1] Assessment of task fulfilment

Subject contents

Ecotoxicology - history and basic concepts. Circuit nitrogen and carbon in nature. Homeostasis. Impact industrial processes on the environment Classification and sources of pollution. Circuit pollutants in nature.Toxicity and methods of absorbing poisons. Characteristics of contaminants: pesticides, dioxins, metalsheavy, radioactive elements, and oil derivatives. The impact of anthropogenic substances environment: eutrophication, the greenhouse effect. Environmental protection law in the legal system of the Republic of Poland. Protection environment under international law. Environmental management systems: EMAS, ISO 14000.Life cycle analysis. Technologies of water for food and industrial applications. technologieswastewater treatment. Sludge management. Air purification technologies. ecosystemsIndustrial. A model industrial ecosystem in Kalundborgu. Principles of Green Engineering.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	60.0%	100.0%

Recommended reading

Basic literature

1. vanLoon G.W., Duffy S.J., Chemia Środowiska, PWN, Warszawa 2008 2. Mering L. Prawo ochrony środowiskaLEX 1998, Wydanie II

	Supplementary literature	1. Matlack A.S., Introduction to green chemistry, Marcel Dekker, Inc. 2001 2. Łomotowski J., Szpindor A.Nowoczesne systemy oczyszczania ścieków, ARKADY 1999 3. Kowal A.L., Świderska-Bróż M., Oczyszczanie wody,PWN 1998
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. The example of selected ecological disaster ohms emissions of mercury to the environment2. Discuss the source of radioactive waste3. Discuss Global Warming (causes, possible consequences of global warming)4. Explain the mechanism of formation and the impact of acid rain on the environment5. Describe what was the Biosphere 2 project6. Discuss the ecosystem model as an example ekosytemu industrial Kalundborgu7. Describe three selected principles of green engineering	
Work placement	Not applicable	