

表 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Air protection , PG_00047996							
Environmental Engineering							
October 2020		Academic year of realisation of subject			2022/2023		
first-cycle studies		Subject group			Optional subject group Subject group related to scientific research in the field of study		
Part-time studies		Mode of delivery			at the university		
3		Language of instruction			Polish lack		
5		ECTS credits			2.0		
general academic profile		Assessment form			asses	sment	
Department of Enviro	nmental Engin	eering Technol	ogy -> Faculty	of Civil	and En	ivironmental E	Engineering
Subject supervisor	dr hab. inż. Ka	atarzyna Kołec	ka				
Teachers							
Lesson type	Lecture	Tutorial	Laboratory		t	Seminar	SUM
hours		5.0	0.0	0.0	0.0		15
-							
Learning activity						tudy	SUM
Number of study hours	I				35.0 54		
		unit processes	related to pollu	utant en	nissions	s, their transfo	rmations and
Course out	Subject outcome			Method of verification			
g outcomes Course outcome [K6_U01] has the ability to self-education, can obtain information from literature, databases and other sources, uses information technology, Internet resources; can integrate the obtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions [K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management [K6_W14] has a structured knowledge of current legal regulations regarding environmental protection, water and construction law; knows the basics of public procurement law, natent law, intellectual property.		The student is able to obtain information from literature, databases and other sources and can interpret them and draw conclusions.			[SU3] Assessment of ability to use knowledge gained from the subject		
		The student has an organized knowledge of the current legal responsible for their formation and methods of reducing them.			[SW1] Assessment of factual knowledge [SW1] Assessment of factual knowledge		
	Environmental Engine October 2020 first-cycle studies Part-time studies 3 5 general academic pro Department of Enviro Subject supervisor Teachers Lesson type Number of study hours E-learning hours inclu Learning activity Student gains the knot technologies for their Course outo [K6_U01] has the able education, can obtain from literature, datab other sources, uses i technology, Internet to can integrate the obta information, make the interpretation, as well conclusions and form justify opinions [K6_W04] possesses knowledge in the field mechanics, ground s reclamation and geof basic knowledge about composition of air, we conclusions and form justify opinions [K6_W04] possesses knowledge in the field mechanics, ground s reclamation and geof basic knowledge about processes responsib formation and ways t them, knows the prin organization of susta management [K6_W14] has a struct knowledge of current regulations regardinge and construction law basics of public proce patent law, intellecture	Environmental Engineering October 2020 first-cycle studies Part-time studies 3 5 general academic profile Department of Enviromental Engine Subject supervisor Teachers Lesson type Lecture Number of study hours Learning activity Rumber of study hours Learning activity Course outcome [K6_U01] has the ability to self- education, can obtain information from literature, databases and other sources, uses information technology, Internet resources; can integrate the obtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions [K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management [K6_W14] has a structured knowledge of current legal regulations regarding environmental protection, water and construction law; knows the	Environmental Engineering October 2020 Academic y realisation first-cycle studies Subject gro Part-time studies Academic y realisation Fractional academic profile Assessmer Department of Environmental Engineering Technol Subject supervisor Department of Environmental Engineering Technol Subject supervisor Department of Environmental Engineering Technol Subject supervisor Ceachers Lesson type Lecture Tutorial Number of study hours Learning activity Raticipation in didactic classes included in study plan Number of study hours Course outcome Subj (K6_U01] has the ability to self- education, can obtain information from literature, databases and other sources, uses information from literature, databases and oranitegrate hobtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions [K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land recomposition of air, water and soil, environmental pollution and processes responsible for their formation and yeotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management [K6_W14] has a structured knowledge of current legal regulations co protection.	Environmental Engineering October 2020 Academic year of realisation of subject first-cycle studies Subject group Part-time studies Mode of delivery 3 Language of instruction 5 ECTS credits general academic profile Assessment form Department of Environmental Engineering Technology -> Faculty Subject supervisor dr hab. in2. Katarzyna Kolect Teachers Itorial Lesson type Lecture Lesson type Lecture Number of study hours 10.0 5.0 0.0 Number of study hours 15 4.0 Student gains the knowledge of the unit processes related to pollitechnologies for their removal. Participation in didactic classes information from literature, databases and other sources; can integrate the obtained information, make their interpret ation, as well as draw conclusions and formulate and justify opinions The student has elementary knowledge of inter formation and ways to reduce them, knowledge about the compositio of sustainable water management The student has an organization of sustainable water management law, intellectual property [K6_W14] has a structured knowledge of the current lega regulations regarding environmental protection, water and soil, environmental protection, water and soil, environmental protection and ways to reduce them, knowledge of current lega regulations c	Environmental Engineering Environmental Engineering October 2020 Academic year of realisation of subject first-cycle studies Subject group Part-time studies Mode of delivery 3 Language of instruction 5 ECTS credits general academic profile Assessment form Department of Environmental Engineering Technology -> Faculty of Civil Subject supervisor dr hab. inž. Katarzyna Kołecka Teachers Lesture Lesson type Lecture Learning activity Participation in didactic classes included in study plan Number of study hours 15 Mumber of study hours 15 Student gains the knowledge of the unit processes related to pollutant entechnologies for their removal. Course outcome Subject outcome [K6_W04] possesses elementary knowledge of the theid of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of sur, water and solit, environmental pollution and the processes responsible for their formation and mechanics, ground science, land reclamation of sustanable water management [K6_W04] possesses elementary knowledge of current legal regulations concerning air pervironmental protection, water and solit, envinches and othe processes responsible for	Environmental Engineering Academic year of realisation of subject 2022 first-cycle studies Subject group Optio Subject supervisor Optio Subject group Optio Subject group Optio Subject supervisor at the 3 3 Language of instruction Polish lack 2.0 5 ECTS credits 2.0 general academic profile Assessment form asses Department of Environmental Engineering Technology -> Faculty of Civil and En Subject supervisor dr hab. inż. Katarzyna Kolecka Teachers Intervinal Laboratory Project Lesson type Lecture Tutorial Laboratory Project Number of study hours 10.0 5.0 0.0 0.0 Ensitiation hours Self-scienciation hou	Environmental Engineering Academic year of realisation of subject 2022/2023 October 2020 Academic year of realisation of subject 2022/2023 first-cycle studies Subject group Optional subject group relat research in the field Part-time studies Mode of delivery at the university 3 Language of instruction Polish lack 5 ECTS credits 2.0 general academic profile Assessment form assessment Department of Environmental Engineering Technology -> Faculty of Civil and Environmental E Subject supervisor dr hab. inž. Katarzyna Kolecka Teachers Teachers Elearning hours included: 0.0 Learning activity Participation in didactic classe included in study plan Participation in consultation hours Setf-study Number of study 15 4.0 35.0 Setf-study Number of study 15 Subject outcome [SU3] Assessment on the student is able to obtain information from literature, databases and draw conclusions. [SU3] Assessment on usbiect Course outcome Subject outcome Method of ve the showledge of air composition, air pollutants and the processes responsible for their formation and can interpret them and draw conclusions. [SW1] Assessment in thowledge of air composit

Subject contents	The composition of atmosphere. The structure of atmosphere. Types of air contaminants and their sources. Characteristic of basic contaminants. Emission of main contaminants in Poland. The influence of selected contaminants on the environment. Phenomena occurring on the global and local scale. Air protection against contaminations. Regulations on air quality - air pollution levels. Methods, technologies and equipment for the retention of dust and gas produced in the sources of emissions - greenhouse gas dedusting, removing gaseous components. Transformation of solar energy into biomass. The biomass potential in Poland. Biomass in agriculture. Biomass conversion processes and their products. The energy crops. Agricultural biogas plants. The physical properties of selected energy crops. Biofuels in the transport sector. Biofuels 1 and 2 generation. Bio-components used in motor fuels.					
Prerequisites and co-requisites	Good knowledge of subject Chemistry (SNPK07)					
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade			
	Passing the lecture test	60.0%	60.0%			
	Completion of exercises - presentation	60.0%	40.0%			
Recommended reading	led reading Basic literature [1] Falkowska L., Korzeniewski K.: Chemia atmosfery. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego, 1995. [2] Juda-Rezler Oddziaływanie zanieczyszczeń powietrza na środowisko. Wars: Oficyna Wydawnicza Politechniki Warszawskiej 2000. [3] Zarzą energią w miastach (red. Zarzycki R.), PAN Oddział w Łodzi. Ko Ochrony Środowiska, Łódź, 2004.[4] Szklarczyk M.: "Ochrona atmosfery" Olsztyn 2001, Wyd. Uniwersytetu Warmińsko-Mazur [3] Klimiuk E., Pawłowska M., Pokój T.: "Biopaliwa. Technologie zrównoważonego rozwoju." Wydawnictwo Naukowe PWN, 2012					
	Supplementary literature	[1] Konieczyński J. Ochrona powietrza przed szkodliwymi gazami. Metody, aparatura i instalacje. Wydawnictwo Politechniki Śląskiej. Gliwice, 2004.				
	eResources addresses	Adresy na platformie eNauczanie:				
Example issues/ example questions/ tasks being completed	-					
Work placement	Not applicable					