GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Management and Environmental Monitoring, PG_00060013		
Field of study	Environmental Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study 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	2	Language of instruction	English
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Environmental Engineering Technology -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Magdalena Gajewska	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	0.0	15.0	0.0	45

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	45	5.0	30.0	80

Subject objectives

The aim of the course is to familiarize students with the principles of monitoring and assessing the quality of individual elements of the environment and the principles of environmental management with an indication of future challenges.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U08] is able to assess risks in the implementation of engineering projects and implement appropriate safety rules	is able to assess threats in the implementation of engineering projects	[SU2] Assessment of ability to analyse information
[K7_W08] has knowledge necessary to understand the social, economic, legal and other non-technical determinants of engineering activities and their incorporation in engineering practice	has the knowledge necessary to understand social, economic, legal and other non-technical conditions of engineering activities and to take them into account in engineering practice	[SW2] Assessment of knowledge contained in presentation
[K7_U01] can obtain information from literature, databases and other sources; can integrate the obtained information, interpret and critically evaluate them, draw conclusions, and formulate and comprehesively justify the opinions	can obtain information from literature, databases and other sources; is able to integrate obtained information, interpret and critically evaluate it, as well as draw conclusions and formulate and comprehensively justify opinions	[SU5] Assessment of ability to present the results of task
K7_U03	Is able to prepare detailed documentation of the results of an experiment or research	[SU5] Assessment of ability to present the results of task
K7_W03	Has in-depth, structured and theoretically based knowledge related to measurement, management and environmental monitoring	[SW2] Assessment of knowledge contained in presentation

<table>
<tr><td>Subject contents</td><td>The subject is dedicated to two issues:

1.First is monitoring of the environment- different component of the environment like water, air, soil and its reliability. The monitoring of water bodes is discused based on Water Framework Directive 2000/60/EU. Air Chemistry, Pollutions, Monitoring and Control.

Case study of Air Quality Index based on air quality monitoring in different cites is elaborated with in the practical exercise.

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2. Second is management and covers:

Historical development of environmental strategies for protection and management, regulations, demands, needs as well as tools and strategies like clean technologies, LCA, issues contacted to climate change and mitigation of its; City resilience and demand for future to cope with climate change. Examples of adaptation and mitigation actions on different levels personal (individual), municipal and governmental are the issue for practical exercise.

The importance and challenges for wastewater management in circular economy. The IWA pronciples for Water Wise Cities as well as Water Sensitive Urban Designe (WSUD) and Blue Green Drem aprouche are disscused with in the issue of modern stormwater managmernt in Cites 2050. Nature Based solution as a tool for sustainable eneviramomant management are discused based on Treatment wetland for water pollution control cases.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>preparation of the presentation</td><td>60.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Gajewska M. (2019). Złoża hydrofitowe z pionowym przepływem ścieków. Charakterystyka procesów i zastosowań. Monografie Komitetu Inżynierii Środowiska PAN nr 150,Warszawa 2019:309s

Wetland Technology, Practical Information on the Design and Application of Treatment Wetlands ed G. Lungergraber , G. Dotro, J. Nivala, A. Rizzo, O. Stein</td></tr>
<tr><td>Supplementary literature</td><td>laws and regulations and https://naukaoklimacie.pl/</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Technologies for recovery of bioavailable phosphorus compounds - phosphorus in the environment, resources, needs2. Regional monitoring on the example of the Pomeranian Voivodeship3. Carbon dioxide - sources of emissions, ways to reduce them, the greenhouse effect, truth and myths4. Rules for monitoring groundwater and surface waters. Surface water classification systems in Poland and the EU5. Smart Cities - challenges and opportunities6. Reclamation of water reservoirs - goals, methods, restrictions</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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