GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Ground Reclamation , PG_00058810		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	Optional 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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geotechnical and Hydraulic Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Lech Bałachowski	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	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	33.0	83

Subject objectives	Evaluation and classification of soil and groundwater contamination. Knowledge of contamination types and remediation methods of soil and ground water. Estimation of soil usefulness to remediation. Recycling and re-use of materials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] can prepare documentation regarding the implementation of an engineering task/project and prepare a text or presentation including a discussion of the results of the implementation	Student knows the standard concerning the evaluation of subsoil contamination	[SU2] Assessment of ability to analyse information
[K6_K01] can think and act in a creative and enterprising way; can set priorities for the implementation of an individual or group task; understands the need for continuous training and professional responsibility for their activities and team	Student knows the method for soil and graoundwater remediation	[SK5] Assessment of ability to solve problems that arise in practice
[K6_K02] understands the need to formulate and communicate to the public information and opinions on the achievements of environmental engineering and other aspects of the sanitary industry engineer's activity; is aware of the importance and understands the non-technical aspects and effects of engineering activities; makes efforts to provide such information and opinions in a widely understandable way, presenting different points of view	Student is able to make a report concerning the soil contamination.	[SK4] Assessment of communication skills, including language correctness
[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	Student is able to propose the remediation method for a given case study.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U16] can, when formulating and solving engineering tasks in environmental engineering, evaluate, select and apply appropriate methods and tools, recognize their non-technical aspects, including environmental, economic and legal aspects	Student has a basic knowledge concerning the waste management and the use of by-products.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Course content – lecture
Lecture: Soil degradation. General rules for remediation of degradated/contaminated areas. Law concerning remediation process. Evaluation and characteristics of contaminated areas. Remediation methods for soil and ground water, monitoring and measurement of contamination level. Recultivation of landfills. Soil classification for remediation purposes. Methods of soil remediation. The management of remediation areas, brownfields. Waste management, re-use of materials, recycling, the use of by-products.

Project: Analysis of contamination level in soil and ground water. Application of remediation methods in soil and ground water

Prerequisites and co-requisites

Basic knowledge of Soil Mechanics, Chemistry and Hydraulic Engineering

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lecture	50.0%	50.0%
Project	50.0%	50.0%

Recommended reading

Basic literature	Holliday George, Guidebook for Waste and Soil Remediation for Nonhazardous Petroleum and Salt-Contaminated Sites, Asme, 2009
Supplementary literature	Journal of Geotechnical and Geoenvironmental Engineering ASCE
eResources addresses	Basic https://www.remea.pl/ - Methods to estimate soil contamination https://instytutremediacji.pl/ - Good practice in remediation

Example issues/ example questions/ tasks being completed	Estimation of soil usefulness to remediation The effect of contamination on soil parameters Remediation methods in saturated and vadose zone
Practical activites within the subject	Not applicable

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