GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Geotechnics, PG_00058808						
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		dr inż. Angelika Duszyńska				
	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	The aim of the course is to familiarize students with geotechnical design.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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	The student understands the non-technical aspects and effects of activities in the field of geotechnical engineering, sanitary structures foundations	[SK5] Assessment of ability to solve problems that arise in practice
[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	The student is able to solve geotechnical problems in environmental engineering, select and apply appropriate methods of design and construction of objects	[SU3] Assessment of ability to use knowledge gained from the subject
[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	Students using the knowledge of soil mechanics distinguishes types of subsoil. He knows how to improve soft soils. He knows the principles of sustainable management of ground resources.	[SW3] Assessment of knowledge contained in written work and projects
[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	The student is able to determine priorities for implementing an individual task - a technical project	[SK3] Assessment of ability to organize work
[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	The student is able to prepare documentation regarding the geotechnical design for a water tank and excavation for a pipeline	[SU1] Assessment of task fulfilment

Subject contents

Course content – lecture
Geotechnical conditions of building foundation. Excavations construction, walls, drainage. Slope stability landslides, retaining structures. Geosyntetics in civil and environmental egineering. Direct foundations types, design principles, construction. Pile foundations types of piles, design principles, construction. Soil improvement methods and range of applications. Non-excavation technologies of underground pipes. Landfills - construction and reclamation. Foundation problems of selected sanitary structures.

Prerequisites and co-requisites

Knowledge of soil mechanics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
project	60.0%	60.0%
test on lectures	55.0%	40.0%

Recommended reading	Basic literature	EN 1997-1 Eurocode 7: Geotechnical design. Part 1: General rules. 2. Bzówka J. i inni: Geotechnika komunikacyjna. Wydawnictwo Politechniki śląskiej 2012.3. Pisarczyk S.: Elementy budownictwa ochrony środowiska, Oficyna Wydawnicza PW, Warszawa 2008.4. Pisarczyk S.: Geoinżynieria. Metody modyfikacji podłoża gruntowego, OW PW, Warszawa 2020.5. Urbański (red.): Podstawy projektowania geotechnicznego. Wprowadzenie do nowych technologii w geotechnice, Wydawnictwo Politechniki Krakowskiej, 20166. Wiłun Z.: Zarys geotechniki. WKiŁ, Wyd. 10. Warszawa 2013.
	Supplementary literature	1. Dąbska A., Gołębiewska A.: Podstawy geotechniki. Zadania według Eurokodu 7, Wydawnictwo: Politechnika Warszawska, 2012.
	eResources addresses	
Example issues/ example questions/ tasks being completed	- Checking the Limit States: UPL and GEO, - Checking the serviceability limit state (SLS) and pipeline in cohesive soiil, checking the slopes stability in construction stage	
Practical activites within the subject	Not applicable	

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