



## Subject card

Subject name and code	Geotechnics, PG_00047992						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Geotechnics, Geology and Marine Civil Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Angelika Duszyńska					
	Teachers	dr inż. Angelika Duszyńska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	5.0	0.0	0.0	0.0	20
	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	20		4.0		55.0	79
Subject objectives	The aim of the course is to familiarize students with geotechnical design.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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 prepares the project of selected sanitary structures foundations, taking into account environmental effects, legal requirements and economic aspects.	[SU1] Assessment of task fulfilment [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	The student identifies geotechnical conditions of building foundation. He describes the construction of excavation and selects the types of walls and drainage systems. Student identifies the types of direct and indirect foundations, describes the technology of their execution, and explains the basic principles of design. Student describes method of soil improvement. He distinguishes methods to provide the slope stability.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[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 engineering activities in the field of geotechnics.	[SK5] Assessment of ability to solve problems that arise in practice
Subject contents	Geotechnical conditions of building foundation. Excavations construction, walls, drainage. Slope stability landslides, retaining structures. Geosynthetics in civil and environmental engineering. Direct foundations types, design principles, construction. Pile foundations types of piles, design principles, construction. Soil improvement. Non-excavation technologies of underground pipes. Landfills - construction and reclamation. Foundation problems of selected sanitary structures		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exercises	60.0%	40.0%
	test	60.0%	60.0%
Recommended reading	Basic literature	1. Bzówka J. i inni: Geotechnika komunikacyjna. Wydawnictwo Politechniki Śląskiej. 2012.  2. Pisarczyk S.: Geoinżynieria. Metody modyfikacji podłoża gruntowego, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.  3. PN-EN 1997-1 Eurokod 7: Projektowanie geotechniczne. Część 1: Zasady ogólne.  4. PN-B-06050 Geotechnika. Roboty ziemne	
	Supplementary literature	1. Dąbska A., Gołębiwska A.: Podstawy geotechniki. Zadania według Eurokodu 7, Wydawnictwo: Politechnika Warszawska, 2012.	
	eResources addresses	Adresy na platformie eNauczanie: Geotechnika IŚ niestacjonarne sem. 5 - zima 2022/23 - Moodle ID: 26573 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26573">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26573</a>	
Example issues/ example questions/ tasks being completed	Calculations of tank foundation: - Checking the Limit States: UPL and GEO, - Checking the serviceability limit state (SLS).		
Work placement	Not applicable		