



Subject card

Subject name and code	, PG_00062839						
Field of study	Civil Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group					
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						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Paweł Więclawski					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30	0.0		0.0	30	
Subject objectives	Courses in the module 'Hands on Engineering'. The main idea is to work as a team in conducting experimental research and simulation of geoengineering issues.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_K02] Can work effectively in a group, as well as function in teams, which may consist of representatives of various branches and levels.	The student executes tasks assigned as part of a research project carried out by a team. Performs and/or coordinates research together with members of the research team.			[SK3] Assessment of ability to organize work [SK2] Assessment of progress of work [SK1] Assessment of group work skills		
	[K6_K03] Can effectively, clearly and unambiguously convey information, describe activities and communicate their results/outcomes to engineers or a wider audience using appropriate communication methods and tools.	The student is able to prepare a research report including: description, analytical and graphical part. Applies appropriate methods of data presentation.			[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness		
	[K6_W05] Demonstrate knowledge and understanding of research methods (obtaining information, simulations, experimental methods) in the field of civil engineering.	The student is able to identify an engineering problem and propose a research programme. Knows what parameters are needed to describe the issue.			[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		
	[K6_U05] Conducts research (obtaining information, simulations, experimental methods) in the field of construction in order to solve specific tasks and report research results.	The student conducts investigations of geotechnical structures on physical models. Able to use basic testing equipment to obtain appropriate data for analysis and interprets the results correctly.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		

Subject contents	<p>Activities in the module 'Hands on Engineering'. The main idea is to work as a team in conducting experimental research and simulation of geoenvironmental issues. The class includes 4 thematic modules:</p> <ol style="list-style-type: none"> 1. Physical model testing and stability analysis of the natural slope of an embankment made of non-cohesive soil at different degrees of compaction. 2. Reinforced soil and geosynthetics. Physical model test of a bridge abutment made of reinforced soil. 3. Model testing of the bearing capacity of a footing on analogue soil. Load tests of the foundation. 4. Working with geotechnical documentation and applications. <p>The specialised test rigs make it possible to observe the failure mechanisms occurring in the subsoil in a plane state of deformation, which will not only facilitate the analysis of the results of our research, but will also serve as an introduction to the independent numerical modelling of engineering structures. We use several alternative measurement techniques in our experiments: analogue, digital and photographic.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	50.0%	20.0%
	Working with geotechnical documentation	50.0%	20.0%
	Soil bearing capacity investigation report	50.0%	20.0%
	Geotechnical structure stability test report	50.0%	20.0%
	Natural slope angle study report	50.0%	20.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Z. Wiłun, Zarys Geotechniki. Wydawnictwo Komunikacji i Łączności, Warszawa 2013. 2. PN-EN 1997-1:2008, Eurokod 7: Projektowanie geotechniczne. Część 1: Zasady ogólne. 3. H. Konderla, Stateczność skarp i zboczy w ujęciu Eurokodu 7. Górnictwo i Geoinżynieria, Zeszyt 32/2, 2008. 	
	Supplementary literature	<ol style="list-style-type: none"> 1. Jaroszewski W., Marks L., Radomski A., Słownik geologii dynamicznej, Warszawa: Wydawnictwa Geologiczne, 1985, s. 109, ISBN 83-220-0196-7. 2. Książkiewicz M., Geologia dynamiczna, Wydawnictwa Geologiczne, Warszawa 1972, s. 185,190 3. Klimaszewski M., Geomorfologia, PWN, Warszawa 1978, s.204 4. Bugajski M., Grabowski W.: Geosyntetyki w budownictwie drogowym. Wydawnictwo Politechniki Poznańskiej. Poznań 1999. 5. PN-EN ISO 10318:2007 Geosyntetyki. Terminy i definicje. 6. Duszyńska A.: Co warto wiedzieć o geosyntetykach. Inżynieria Morska i Geotechnika 2010, nr 2. 	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. What is soil? 2. What is a geotechnical structure? 3. What is a natural slope angle? 4. List the uses of geosynthetic materials. 5. List the calculation methods for the general stability of slopes and hillsides. 6. List the basic strength parameters of non-cohesive soils. 		
Work placement	Not applicable		

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