



Subject card

Subject name and code	Geoengineering, PG_00036783						
Field of study	Civil Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2022/2023		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Angelika Duszyńska				
	Teachers		dr inż. Angelika Duszyńska prof. dr hab. inż. Lech Bałachowski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	0.0	45
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12503						
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		8.0		7.0	60
Subject objectives	The aim of the subject is to provide new possibilities in application of geoengineering solutions in practice of civile and environmental engineering.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K03] can think and act creatively and enterprisingly and works for society		Student is able to design the soft subsoil improvement with vertical drains as more economic and ecologic solution is applied. Student is able to apply new materials and technologies in geoengineering.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements		Student is able to design an anchor system for sheet pile wall as a suport of excavation using the results of CPTU tests.		[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	Bases of geotechnical design with new generation of Eurocodes. Role of soil investigation in the proces of construction. Landslides reasons, results, practical solutions modern method of slope protection. Innovative technologies of subsoil improvement. Underground structures trenchless tunneling with relations to current constructions in Poland and abroad. Application of vertical drains technology. Interpretation of in-situ soil investigation and their application in subsoil improvement design. Ground anchors design.						
Prerequisites and co-requisites	Knowledge of Soil Mechanics and Foundation Engineering						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Design exercises		60.0%		50.0%		
	Test on lectures		60.0%		50.0%		
Recommended reading	Basic literature		T.Lunne, P.K.Robertson and J.J.M.Powell, Cone penetration testing in geotechnical practice, B A&P, 1997				
			Canadian Geotechnical Journal				

	Supplementary literature	<p>Proceedings European Conference of Soil Mechanics and Geotechnical Engineering - Edinbourg 2015 i Reykjavik 2018</p> <p>Acta Geotechnica</p> <p>L.Balachowski, Physical modeling in sands in a wide range of stress level, application to the calibration of CPTU and DMT tests, Politechnika Gdańska. Monografia 88. 2008.</p> <p>www.geosoft.com, www.geostru.com, www.geologismiki.gr</p>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>Stability of embankments on soft subsoil</p> <p>Acceleration methods of subsoil consolidation</p> <p>Interpretation of subsoil parameters with CPTU method and laboratory tests</p> <p>Bearing capacity of single ground anchor</p>	
Work placement	Not applicable	