



Subject card

Subject name and code	, PG_00043296						
Field of study	Coastal and Offshore Engineering, Coastal and Offshore Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study 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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			4.0		
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	prof. dr hab. inż. Lech Bałachowski					
	Teachers	prof. dr hab. inż. Lech Bałachowski dr inż. Angelika Duszyńska					
Lesson types and methods of instruction	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	10.0		45.0	100	
Subject objectives	Student get knowledge on hydrotechnic structures in maritime and in land civil engineering and the foundation methods.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W02	Student is able to perform analysis of global stability of hydrotechnic structures.			[SW1] Assessment of factual knowledge		
	K7_U10	Student is able to interpret the profile from CPTU sounding.			[SU4] Assessment of ability to use methods and tools		
	K7_U09	Student knows the technologies of foundation works and soil improvement.			[SU3] Assessment of ability to use knowledge gained from the subject		
	K7_W07	Student is able to perform basic soil classification tests and to determine the geotechnical parameters related to strength and subsoil deformability.			[SW1] Assessment of factual knowledge		
Subject contents	The types of marine, nearshore and in land hydrotechnic structures. Actions on hydrotechnic structures. Earth pressure. Filtration in earth structures and protection against the effects of filtration. Bottom erosion due to water flow. In situ soil investigations. The choice of foundation type. Shallow foundations. Piles and pile foundations. Sheet pile walls and slurry walls. The equipment in piling works. Soil compaction under water. Soil improvement. Anchors and their bearing capacity. Design of hydrotechnic structures using limit state methods. Foundation of port and wharf structures. Foundation engineering for waterways hydrotechnic structures. Concreting under water. Protection of seashore. Slope stability.						
Prerequisites and co-requisites	Bases of seabottom geology and mechanics						
Assessment methods and criteria	Subject passing criteria	Passing threshold		Percentage of the final grade			
	lecture - test	50.0%		60.0%			
	project	50.0%		40.0%			
Recommended reading	Basic literature	web sites of enterprises, societies, projects or ports					
	Supplementary literature	Journal of Geotechnical and Geoenvironmental Engineering ASCE					
	eResources addresses						

Example issues/ example questions/ tasks being completed	Review of hydrotechnic structures. Earth pressure as a function of relative displacement soil-retaining wall. Principal law concerning filtration in the soil and its applicability domain. Prevention methods against filtration effects. Methods to determine effective and total shear strength parameters. Bearing capacity and settlements of direct foundation. Bearing capacity of single pile. General slope stability. Seashore protection structures.
Work placement	Not applicable