



Subject card

Subject name and code		Hydro and Marine Engineering, PG_00065727						
Field of study		Civil Engineering						
Date of commencement of studies		October 2023	Academic year of realisation of subject			2025/2026		
Education level		first-cycle studies	Subject group					
Mode of study		Full-time studies	Mode of delivery			at the university		
Year of study		3	Language of instruction			Polish		
Semester of study		6	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 hab. inż. Waldemar Magda				
		Teachers						
Lesson types		Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
		Number of study hours	15.0	30.0	0.0	0.0	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	0.0		0.0		45
Subject objectives		A student learns basic constructions of hydro- and marine civil engineering. A student calculates discharge of spillways and outlet works with respect to given spillway design flood. A student selects a proper type of a vertical-wall breakwaters and rubble mound breakwaters with respect to given water depth, wave and geotechnical conditions. A student defines and computes forces acting on the hydro- and marine civil engineering structures due to environmental loading conditions. A student performs stability analysis and checks some basic stability conditions for the structure under design.						
Learning outcomes		Course outcome	Subject outcome			Method of verification		
		[K6_W02] Demonstrate knowledge and understanding of the processes and established methods of analysis / solution of engineering issues & problems in the field of civil engineering and of their limitations.	Demonstrates knowledge and understanding of the processes and principles and methods of analysis/solving engineering issues and problems in the field of hydro- and marine civil engineering and is aware of their limitations.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
		[K6_U01] Apply knowledge and understanding of mathematics as well as sciences and engineering disciplines underlying civil engineering to solve engineering problems and issues.	Applies the knowledge of mathematics and the sciences and engineering disciplines underlying the hydro- and marine civil engineering to solve engineering problems and issues.			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
		[K6_U02] Analyse & solve engineering issues & problems in the field of civil engineering by applying appropriate and relevant established analytical, numerical and experimental methods.	Analyses and solves engineering issues and problems in the field of hydro- and marine civil engineering through the use of appropriate analytical and experimental tools and methods.			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
		[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment	Demonstrates an understanding of the impact of hydro- and marine hydrotechnical structures on the environment and the interrelationships and dependencies between the structures and the natural environment.			[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		

Subject contents	<p>Course content – lecture Hydro-engineering (inland)</p> <p>Water resources - national and international. Functions of the role of reservoirs. The handling of flood waters. Uncontrolled spillways, gated spillways, spillway chutes, energy dissipation. Outlet works. Gravity dams. Embankment dams. Hydropower.</p> <p>Marine Civil Engineering</p> <p>Scope of Marine Civil Engineering. Influence of dynamic increase of global effects (population, energy consumption, environmental pollution, greenhouse effect) on the needs and challenges faced to the marine civil engineering. Design and construction of rubble mound and monolithic typebreakwaters. Storm surge barriers as flood protection marine structures. Hydrodynamic loading of surface water waves (non-breaking and breaking) on vertical-wall breakwaters. Uplift force (hydrostatic and hydrodynamic) acting on verticalwall breakwaters and submarine pipelines.</p>											
Prerequisites and co-requisites	No requirements											
Assessment methods and criteria	<table border="1" data-bbox="448 645 1497 757"> <thead> <tr> <th data-bbox="448 645 794 689">Subject passing criteria</th> <th data-bbox="794 645 1141 689">Passing threshold</th> <th data-bbox="1141 645 1497 689">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 689 794 723">written test (inland part)</td> <td data-bbox="794 689 1141 723">60.0%</td> <td data-bbox="1141 689 1497 723">50.0%</td> </tr> <tr> <td data-bbox="448 723 794 757">written test (marine part)</td> <td data-bbox="794 723 1141 757">60.0%</td> <td data-bbox="1141 723 1497 757">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	written test (inland part)	60.0%	50.0%	written test (marine part)	60.0%	50.0%
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written test (inland part)	60.0%	50.0%										
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Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Roberson J. A., Cassidy J. J., Chaudhry H.: Hydraulic Engineering. Wiley, 1998.</li> <li>2. Prasuhn A. L.: Fundamentals of Hydraulic Engineering. Oxford University Press, USA, 1995.</li> <li>3. Novak P.: Hydraulic Structures. Routledge, 2006.</li> <li>4. Hueckel S.: Budownictwo morskie. Tom I, II, III, IV, Wydawnictwo Morskie, Gdańsk, 1972.</li> <li>5. Mazurkiewicz B.: Morskie budowle hydrotechniczne. Politechnika Gdańska, Gdańsk, 1987.</li> <li>6. Mazurkiewicz B.: Encyklopedia Inżynierii Morskiej. Wydawnictwo Morskie, Gdańsk, 1986.</li> </ol>										
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Depczyński W., Szamowski A.: Budowle i zbiorniki wodne. Oficyna PWN, 1999.</li> <li>2. Balcerski W. i inni: Budownictwo betonowe t. XVII. Arkady, 1969.</li> <li>3. Poradnik hydrotechnika. Praca zbiorowa pod red. S. Massela, Wydawnictwo Morskie, Gdańsk, 1992.</li> <li>4. Morskie budowle hydrotechniczne. Zalecenia do projektowania i wykonawstwa Z1-Z45. Praca zbiorowa pod red. B. Mazurkiewicza, FPPOiGM, Gdańsk, 2006.</li> <li>5. Shore Protection Manual, USA, 1984.</li> <li>6. Inżynieria Morska i Geotechnika (dwumiesięcznik).</li> </ol>										
	eResources addresses											
Example issues/ example questions/ tasks being completed	No sample issues and questions											
Practical activities within the subject	Not applicable											

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