GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00071091		
Field of study	Civil Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	Optional subject group
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	8	ECTS credits	2.0
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 inż. Witold Sterpejkowicz-Wersocki	
	Teachers	dr inż. Witold Sterpejkowicz-Wersocki dr inż. Witold Tisler	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	0.0	10.0	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	0.0	0.0	20

Subject objectives

Students learn about the design of inland and marine hydrotechnical structures and their operating principles. They analyze and verify the basic stability conditions of marine and inland hydrotechnical structures. The student acquires knowledge of the basic parameters of wave action and is able to determine the impact of this phenomenon on the structure.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_K04] Engages in independent lifelong learning and individually follows the development of science and technology in the field of civil engineering.	The student knows the role of hydropower plants in energy transformation and is able to independently assess the resulting benefits.	[SK4] Assessment of communication skills, including language correctness
[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 investigates the influence of anti-seepage screens (type, length) on the buoyancy force.	[SU1] Assessment of task fulfilment
[K6_W03] Demonstrate knowledge and understanding of the processes, established standards and design methods in the civil engineering subject area and of their limitations.	The student knows the hydraulic phenomena related to the flow of water through a damming structure and is able to design a weir stilling basin.	[SW3] Assessment of knowledge contained in written work and projects
[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 convey information, describe and communicate the benefits resulting from the existence of damming structures.	[SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.	The student is aware of the responsibility for the decisions and opinions formulated related to the design/construction/operation of inland and marine water structures.	[SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Waterways. Canal design. Basics of earth dam design. Basics of hydropower. Ocean waves. The most important wave design parameters, methods for determining them, and sources of meteorological and ocean information.
Course content – project
Basics of weir design - calculation of the minimum weir clearance, capacity calculation, calculation of the discharge plate, calculation of filtration under the weir, collection of loads, checking the stability of selected weir elements, preparation of weir construction drawings. Determining wave height based on measurement data. Determining the hydrodynamic pressure acting on offshore hydraulic structures.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Completion of the Hydro and Marine Civil Engineering course.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Evaluation of the design task</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>• Balcerski i inni Budownictwo Betonowe tom XVII, Budowle Wodne Śródlądowe, Arkady, Warszawa, 1969
• Fanti i inni Budowle piętrzące, Wydawnictwo Arkady, Warszawa, 1972
• Żbikowski i inni Zapory ziemne, Wydawnictwo Arkady, Warszawa, 1973
• Bednarczyk, Bolt, Mackiewicz Stateczność oraz bezpieczeństwo jazów i zapór, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2009
• Depczyński, Szamowski Budowle i zbiorniki wodne, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1999
• Adamski W., Gortat J., Leśniak E., Żbikowski A., Małe budownictwo wodne dla wsi, Wydawnictwo Arkady, Warszawa, 1986
• Magda, W. (2020). Budownictwo morskie. Wybrane zagadnienia wraz z przykładami obliczeniowymi (pp. 1-427). Wydawnictwo Naukowe PWN.</td></tr><tr><td>Supplementary literature</td><td>• Bednarczyk Budownictwo Wodno-Melioracyjne. Jazy. Cz. I i II, Akademia Rolnicza im. H. Kołłątaja, Kraków 1985
• Boretti Konstrukcje stalowe w budownictwie wodnym, Wydawnictwo Arkady, Warszawa 1968
• Boretti i inni Przykłady obliczeń konstrukcji stalowych, Wydawnictwo Arkady, Warszawa 1993
• Adamski, Gortat, Leśniak, Żbikowski Małe budownictwo wodne dla wsi, Wydawnictwo Arkady, Warszawa, 1986
• Steller i inni Jak zbudować elektrownię wodną? Poradnik inwestora, Instytut PAN, Bruksela/Gdańsk, 2010
• Mioduszewski Stawy, małe zbiorniki wodne, Powszechne Wydawnictwo Rolnicze i Leśne, Warszawa, 2014
• Mioduszewski Budowa stawów, Oficyna Wydawnicza Hoża, Warszawa 2007</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Ways to reduce buoyancy force. Determination of key wave parameters based on obtained meteorological data. Calculation of hydrodynamic force acting on sea breakwaters.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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