GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Waterways design, PG_00064996						
Field of study	Transport and Logistics						
Date of commencement of studies	February 2027		Academic year of realisation of subject	2027/2028			
Education level	second-cycle studies		Subject group	Specialty subject group 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	3.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Transport and Logistics -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Jakub Montewka				
	Teachers		prof. dr hab. inż. Jakub Montewka				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	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		4.0	26.0		75
Subject objectives	The objective of the course is to familiarize the student with the basic issues related to the design, operation, and modernization of waterways, including the classification of waterways, their infrastructure, the hydrotechnical structures that make up an inland waterway, as well as the navigation and teleinformation infrastructure of the waterway. The ship types and the physical basis of their movement are described. Finally, development trends of inland and maritime routes in the framework of the EU policy of the trans-European transport network TEN -T are presented.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W01] explains and describes, based on general knowledge in the field of scientific disciplines forming the theoretical foundations of Transport and Logistics, the construction and principles of operation of transport systems, processes and their components, as well as methods and means of their integration	The student knows the basic principles of inland navigation related to means of transport and transport infrastructure.	[SW1] Assessment of factual knowledge
[K7_W12] identifies and interprets the main developmental trends and significant new achievements in the field of engineering and technical sciences and disciplines relevant to the course of study	The student is able to evaluate existing water structures in terms of their functionality and safety, as well as propose innovative solutions that improve the efficiency of water transport.	[SW3] Assessment of knowledge contained in written work and projects
[K7_W03] demonstrates structured and theory supported knowledge encompassing key issues in the field of Transport and Logistics, enabling developement and synthesis of transport systems and processes	Student zna przynajmniej jednje metodę projektowania przysztnego śródlądowej drogi wodnej, zna jej grześnia oraz zakres stosowalności.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
[K7_W11] interprets social, economic, legal (including industrial and intellectual property laws), and other non-technical aspects of engineering activities, and includes them into engineering practice	The student is able to apply this knowledge in engineering practice, assessing the impact of these conditions on design decisions, project management, and conducting engineering activities in an ethical and responsible manner.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation

Subject contents

Course content – lecture

1. Classification of inland waterways, line and point infrastructure of these roads;
2. Basic hydrotechnical structures forming an inland waterway.
3. Basics of planning of waterways in classical manner and using risk based methods.
4. Current methods for determining the safe width, depth and capacity of waterways.
5. Methods of assessing the safety of navigation on waterways.
6. Types of ships and physical principles related to buoyancy, stability, and resistance of marine and inland vessels.
7. Elements of navigation and tele- IT infrastructure that ensure safe operation of waterways.
8. Development trends of inland and maritime waterways in the context of the TEN -T policy of the trans-European transport network.

Course content – project

Determination of safe parameters of an inland waterway using the selected design method.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Assignments completed	51.0%	50.0%
Final test completed	51.0%	50.0%

Recommended reading

Basic literature	1. Jan Kulczyk Jan Winter, ***Śródlądowy transport wodny***, Wrocław 2003 2. Stanisław Gucma (redakcja), Morskie drogi wodne. **Projektowanie i eksploatacja w ujęciu inżynierii ruchu**. Gdańsk, 2015 3. PIANC, Harbour approach channels design guidelines. PIANC report No 121. Brussels, 2014 4. Fisheries and Oceans Canada, Safe waterways, Part 1(a), Guidelines for the safe design of commercial shipping channels. 5. US Army Corps of Engineers, Hydraulic design of deep-draft navigation projects. Washington 2006
Supplementary literature	1. Ryszard Rolbiecki, Krystyna Wojewódzka-Król, Aleksandra Gus-Puszczewicz, Transport wodny śródlądowy w zrównoważonym rozwoju. Wyd. Uniwersytetu Gdańskiego 2020. 2. Rozporządzenie Ministra Infrastruktury z dnia 28 kwietnia 2003 r. w sprawie przepisów żeglugowych na śródlądowych drogach wodnych 3. Ustawa z dnia 20 lipca 2017 r. - Prawo wodne 4. USTAWA z dnia 21 grudnia 2000 r. o żegludze śródlądowej 5. https://www.nik.gov.pl/aktualnosci/rozwoj-srodladowych-drog-wodnych.html 6. The overseas coastal area development institute of Japan, Technical standards and commentaries for port and harbour facilities in Japan. Tokyo 2009.
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Example issues/ example questions/ tasks being completed	
Practical activites within the subject	Not applicable

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