



Subject card

Subject name and code	Waterways design, PG_00064996						
Field of study	Projektowanie i modernizacja dróg wodnych						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
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						
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_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.	[SW2] Ocena wiedzy zawartej w prezentacji [SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
	[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] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
	[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] Ocena wiedzy faktograficznej
	[K7_W03] demonstrates structured and theory supported knowledge encompassing key issues in the field of Transport and Logistics, enabling development and synthesis of transport systems and processes	Student zna przynajmniej jedną metodę projektowania przyszłego śródlądowej drogi wodnej, zna jej grzesnia oraz zakres stosownosci.	[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym [SW2] Ocena wiedzy zawartej w prezentacji
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
	Final test completed	51.0%	50.0%
	Assignments 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.	
	eResources addresses		

Example issues/ example questions/ tasks being completed	
Practical activities within the subject	Not applicable

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