

Subject card

Subject name and code	System of Transportation of bulk cargos, PG_00045235								
Field of study	Transport and Logistics, Transport and Logistics								
Date of commencement of studies	October 2020		Academic year of realisation of subject			2022/2023			
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	5		ECTS credits			4.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Department of Marine Mechatronics -> Faculty of Ocean Engineering and Ship Technology								
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Wojciech Litwin							
	Teachers		mgr inż. Ewa Wojtowicz						
			dr inż. Jacek Nakielski						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	30.0	0.0	0.0	0.0		15.0	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		5.0		42.0		92	
Subject objectives	The aim of the course is to familiarize students with various systems of transporting solid, liquid and gas bulk cargo including intermodal transport.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of means and systems of transport		The student has an extensive knowledge of bulk cargo, is able to select the optimal transport chain for a specific cargo on a given route using lands and waterways.			[SU4] Assessment of ability to use methods and tools [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_W05] has an organized knowledge on design, construction and operation of means and systems of transport		The student is able to characterize the floating units intended for the transport of bulk cargo, as well as ship and harbor handling eqipment used for the reloading of bulk solid, liquid and gas.			[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects			

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Subject contents	1. Introduction to the course.							
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	 Bulk cargo transport chains of solid, liquid and gas with the use of roads and waterways. Types of cargo. General characteristics of the vessels used for the transport of cargo respectively mass of solid, liquid and gas. The technical characteristics of bulk carriers, tankers and gas carriers. Oil - ownership, the basic species of crude oil. Deposits of oil. Mining and oil pretreatment. Processing of crude oil. Utilities oil products. Exploitation of offshore oil - examples of design solutions. Operating platforms, FPSO vessels type / FPSU. Storing oil in fixed tanks and vessels (FPSO vessels type / FPSU). Transhipment of oil at sea. Systems and devices for transhipment at sea. Shuttle tankers. Oil terminals. Transport tanks of crude oil and petroleum products. Transportation of oil pipelines (oil pipelines). Geography transportation of crude oil. Dry bulk coal ore, grain, fertilizers and other - ownership and the requirements for their transport. Design solutions of various cargo transshipment of dry bulk. Technical characteristics of vessels to transport dry bulk. Liquefied natural gas, liquefied petroleum gas, compressed natural gas - physical properties, receive. Cargo transportation by sea gas tankers, gas type LNG, LPG and PNG. Storage and cargo handling systems for gas. Routes freight transport gas. The basic rules on cargo gas. Port handling equipment and installed on ships used for loading and unloading of bulk solid, liquid and gas. Marine Equipment systems required to maintain ownership of freight of solid, liquid and gas during carriage by sea. 							
Prerequisites								
and co-requisites								
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade					
	1 presentation	60.0%	20.0%					
	4 tests for the semester	60.0%	80.0%					
Recommended reading	Basic literature	R. Urbaniak, "Typical bulk cargo and transport" Wiewióra A., Wesołek Z., J. Puchalski, "Crude oil for maritime transport"						
	Supplementary literature	Magda W., "Offshore Pipelines"						
	eResources addresses	Adresy na platformie eNauczanie:						
		22/23 (O:09980) - Moodle ID: 2631	Ladunków Masowych (S), STW, sem. 5, zimowy loodle ID: 26318 g.edu.pl/moodle/course/view.php?id=26318					
Example issues/ example questions/ tasks being completed								
Work placement	Not applicable							

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