



## Subject card

Subject name and code	Hybrid powertrains in waterborne transport, PG_00057120						
Field of study	Transport and Logistics						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional 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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Wojciech Leśniewski					
	Teachers						
Lesson types and methods of instruction	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		10.0		45.0	100
Subject objectives	New directions of propulsion systems development used in transport. Hybrid propulsion systems in vehicles.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W08] The student has a structured and extended knowledge of automation, control, management and energy efficiency in transport systems	Is able to propose a technical solution of the drive system with the highest energy efficiency for the presented operating conditions.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_W03] The student has extensive knowledge of: reliability and safety of transport systems and environmental protection in transport	Can propose a drive system solution with a high level of reliability based on available knowledge.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K7_W09] The student has a structured and expanded knowledge of the design and operation of systems and infrastructure as well as new technologies in multimodal transport	The student analyzes the latest solutions and standards in the use of unconventional drive systems.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K7_U03] The student is able to make a detailed analysis of the results obtained, and to develop them in the form of a technical report or presentation, also in English	Creates technical documentation and presentations regarding solved problems.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
Subject contents	Diesel-electric propulsion systems used in sea and road transport						
Prerequisites and co-requisites	Pass the subject of Electrical Engineering and Marine Electronics, Fundamentals of Machine Design						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		50.0%	25.0%
		50.0%	25.0%
		50.0%	50.0%
Recommended reading	Basic literature	Propulsion System for Hybrid Vehicles <i>John M. Miller</i>  Advanced Components for Electric and Hybrid Electric Vehicles	
	Supplementary literature	Podstawy konstrukcji maszyn <i>Włodzimierz Chomczyk</i>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Propulsion system of a passenger ferry for 30 people depending on the water body.		
Work placement	Not applicable		