GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Power Engineering Systems in Transport, PG_00045237		
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 Ship and Land Based Power Plants -> Faculty of Ocean Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Konrad Marszałkowski	
	Teachers	dr inż. Konrad Marszałkowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	0.0	0.0	0.0	60

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	60	5.0	35.0	100

Subject objectives

Introducing students to issues related to energy sources, examples of energy systems encountered in transport and economic aspects related to the efficiency of energy equipment and systems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W03] has a basic knowledge on hydromechanics, thermodynamics, machine construction, ecology, materials science and electronics necessary to understand the construction and operation principles of means of marine transport	The student knows how to reduce fuel consumption by devices and energy systems. The student can explain the influence of the transported cargo on the solution of the energy system of the vessel. The student is familiar with the issues of power supply to ports.	[SW1] Assessment of factual knowledge
[K6_W04] has a basic knowledge in IT, electronics, automation and control, computer graphics useful to understand the possibilities of their application in transport	Student lists renewable and non-renewable energy sources. The student gives examples of propulsion systems, methods of generating electricity and heat on ships. The student knows the dependencies determining the efficiency of the device and the energy system.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation
[K6_W08] has knowledge regarding the principles of sustainable development	The student understands the impact of the efficiency of the energy system on the natural environment. The student understands the ecological values of using renewable energy sources. The student knows what is redundancy in energy systems.	[SW1] Assessment of factual knowledge

Subject contents

Energy. Types of energy. Renewable and non-renewable energy sources. Energy system. Generation of mechanical, electrical and thermal energy. Efficiency of the energy device and the energy system. Ways of increasing energy efficiency. Ship power plant as an example of an energy system. Influence of the type of transported cargo on the ship's energy system solution. Energy systems of ports and logistic centers. The impact of the port infrastructure, logistics center on the solution of the energy system

Prerequisites and co-requisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	60.0%
		60.0%	40.0%
Recommended reading	Basic literature	1.Urbański P.: Gospodarka energetyczna na statkach, Wyd. Morskie 1978 2.Woud H. K., Stapersma D.: Design of propulsion and electric power generation systems. IMarEST, London 2002 3.Kosowski K. Turbines for ship propulsion, wyd. PG, Delft University, Gdańsk 2005.	
	Supplementary literature	1. Wojnowski W.: Okrętowe siłownie spalinowe. Morski Instytut Rybacki. Gdynia 1991. Część I, II.	
	eResources addresses	Adresy na platformie eNauczanie: Systemy energetyczne w transporcie, W, TiL, sem 05, zimowy 22/23 - Moodle ID: 26087 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26087	
Example issues/ example questions/ tasks being completed	1. Replace renewable and non-renewable energy sources.2. Determine the efficiency of a given energy system.3. List the methods of generating electricity on the ship.4. Give the conditions for the transportation and handling of crude oil.		
Work placement	Not applicable		