



## Subject card

Subject name and code	Energy Systems Stations (WOiO), PG_00042106						
Field of study	Power Engineering, Power Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			English		
Semester of study	7	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. Roman Liberacki				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30		5.0		65.0	100
Subject objectives	To acquaint the students with the construction and operation of energy systems, using as an example the ship power plant.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
Subject contents	Internal combustion engines - principle of operation and classification. Heat balance of the engine. Uniform and combined propulsion systems. The main components of the propulsion system. Power plant efficiency and waste heat utilization. Cooling water system, lubricating oil system, fuel oil system, gaseous fuel system (LNG), compressed air system, exhaust gas system. Fittings and accessories of pipeline systems in the power plant. Layout of equipment in the ship power plant. Start, supervision during operation and shutdown of the propulsion system - using the simulator of ship power plant.						
Prerequisites and co-requisites	Knowledge of the subject: thermodynamics.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Test on simulator		100.0%		50.0%		
	Written test		50.0%		50.0%		
Recommended reading	Basic literature		1. Hans Klein Woud, Douwe Stapersma: Propulsion and Electric Power Generation systems. IMAREST 2002				
	Supplementary literature		No requirements.				
	eResources addresses		Adresy na platformie eNauczanie:				
Example issues/ example questions/ tasks being completed	1. Give the formula for the brake thermal efficiency of the internal combustion piston engine.  2. Give the formula for the energy efficiency of the ship power plant and discuss the methods of improving the efficiency.  3. Make a start-up, control during operation, and set off the propulsion system on simulator.						
Work placement	Not applicable						