



Subject card

Subject name and code	Power Plant Consumables, PG_00033726						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022		
Education level	first-cycle studies	Subject group					
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			2.0		
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	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=7104 Adresy na platformie eNauczanie: Materiały Eksploatacyjne Siłowni - Moodle ID: 17754 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17754						
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	15	2.0	33.0	50		
Subject objectives	The aim of the course is to introduce students to issues related to the origin of liquid and gaseous fuels and lubricants. Students will learn the properties and characteristics of propellants and lubricants used in shipbuilding along with the methods of their determination. The content of the course also includes the classification and characteristics of fuels and lubricating oils from the operational perspective.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_K03	The student understands the impact of petroleum-derived liquid fuels on the natural environment. The student understands the ecological values of using renewable energy sources.			[SK2] Assessment of progress of work		
	K6_W06	Student is able to classify and characterize propellants and lubricants used in marine power plants.			[SW1] Assessment of factual knowledge		
Subject contents	1. Crude oil - definition, classification, preparation for transport 2. Crude oil distillation - conservative distillation, destructive distillation, cracking 3. Properties of petroleum products 4. Task of the cooling system of marine piston engines, cooling agents (operational requirements) 5. Lubricating oil installation - tasks 6. Lubricating oils - types, advantages and disadvantages, classification 7. Classification of marine fuels 8. Fuel installation - cleaning of residual marine fuels 9. Plastic lubricants - advantages / disadvantages, types, classification 10. Fuels used in marine nuclear reactors, levels of enrichment, design of fuel elements.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	100.0%
Recommended reading	Basic literature	1. Urbański P.: Paliwa i smary, Wydawnictwo Politechniki Gdańskiej, Gdańsk 1997. 2. Urbański P.: Instalacje okrętów i obiektów oceanotechnicznych. Wydawnictwo Politechniki Gdańskiej, Gdańsk 1994. 3. Włodarski J.K.: Podstawy eksploatacji maszyn okrętowych. Tarcie i zużycie. Wydawnictwo Akademii Morskiej w Gdyni. Gdynia 2006.	
	Supplementary literature	4. Wojnowski W.: Okrętowe silownie spalinowe. Morski Instytut Rybacki. Gdynia 1991. Część I, II.	
	eResources addresses	Materiały Eksploatacyjne Siłowni - Moodle ID: 17754 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17754	
Example issues/ example questions/ tasks being completed	1. Crude oil - definition, classification, preparation for transport (diagram and short description of processes); 2. Crude oil distillation - conservative distillation (diagram, short description of the process, fractions), decomposition distillation, cracking (input material, what we obtain, types of catalysts); 3. Properties of petroleum products (viscosity, density, auto-ignition temperature, Conradson number, ash content, heating value TOP / LOWER, cetane number, auto-ignition delay) and methods of their determination (briefly); 4. Task of the cooling system of marine piston engines, cooling agents (operational requirements); 5. Lubricating oil installation - tasks; 6. Lubricating oils - types, advantages and disadvantages, classification (4 characteristic parameters, standard, designation); 7. Classification of marine fuels; 8. Fuel installation - cleaning of residual marine fuels; 9. Plastic lubricants - advantages / disadvantages, types (thickeners), classification; 10. Fuels used in marine nuclear reactors, levels of enrichment, design of fuel elements.		
Work placement	Not applicable		