



Subject card

Subject name and code	Fundamentals of Machinery Operation and Power Engineering Devices, PG_00042066						
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			2022/2023		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			3.0		
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	prof. dr hab. inż. Zbigniew Korczewski					
	Teachers	dr inż. Patrycja Puzdrowska prof. dr hab. inż. Zbigniew Korczewski mgr inż. Dominik Kreft					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	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	5.0		25.0	75	
Subject objectives	To explain the basic notions concerning wear and tear processes of machines and devices. To bring closer a physics of the operation damages. To teach designing and management methods within the operating system. To train practical skills within the range of engines' and working machines' usage.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W04	Student applies the knowledge within the range of operation bases for the practical usage and supervising the machines and energy devices in different working states.			[SW3] Assessment of knowledge contained in written work and projects		
	K6_W06	Student explains the processes of degradation of technical state of objects and energy systems. He describes the operation process of machines and energy devices.			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	<p>Lecture: The phases of machines and energetistic devices' existence - the informative coupling and feedback. Physical aging of machines and energetistic devices. The kinds of wear and tear processes of machines and energetistic devices - the ways of their reducing. The usage and servicing of machines and energetistic devices. The operation process of machines and energetistic devices - the physical interpretation of the process, mathematical models, the measures of the process course's evaluation. The decision controlling of the operation process. The basis of logistics in the operation system. The elements the operation management of machines and energetistic devices - the analysis of operation costs, the system of a costs computation.</p> <p>Laboratory: A preparation of a SI engine for starting-up, the supervision while its working and the laying-off the engine. A preparation of a gas turbine engine for starting-up, the supervision while its working and the laying-off the engine. A preparation of a piston compressor for starting-up, the supervision while its working and the laying-off the compressor. The preparation of fuel centrifuges for starting-up, the supervision while its working and the laying-off the centrifuge. The measurement the lubricity, ignition temperature and viscosity of lubricative oils and fuels.</p>											
Prerequisites and co-requisites	The knowledge within the range of construction and principle of working of machines and energetistic devices.											
Assessment methods and criteria	<table border="1" data-bbox="448 584 1487 712"> <thead> <tr> <th data-bbox="448 584 794 622">Subject passing criteria</th> <th data-bbox="794 584 1141 622">Passing threshold</th> <th data-bbox="1141 584 1487 622">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 622 794 674">Reports from executed laboratory practices</td> <td data-bbox="794 622 1141 674">100.0%</td> <td data-bbox="1141 622 1487 674">50.0%</td> </tr> <tr> <td data-bbox="448 674 794 712">Midterm colloquium</td> <td data-bbox="794 674 1141 712">50.0%</td> <td data-bbox="1141 674 1487 712">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Reports from executed laboratory practices	100.0%	50.0%	Midterm colloquium	50.0%	50.0%
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Recommended reading	Basic literature	<p>L. Bendkowski: Elementy diagnostyki technicznej, WAT, Warszawa 1992 rok.</p> <p>J. Biernat, J. Girtler: Techniczna eksploatacja okrętów, WSMW, Gdynia 1983 rok.</p> <p>M. Hebda: Teoria eksploatacji pojazdów, WKiŁ, Warszawa 1978 rok.</p> <p>J. Konieczny: Wstęp do teorii eksploatacji urządzeń, WNT, Warszawa 1971 rok.</p> <p>Z. Korczewski: Diagnostyka eksploatacyjna okrętowych silników spalinowych- tłokowych i turbinowych. Wybrane zagadnienia. Wydawnictwo PG, Gdańsk 2017.</p> <p>M. Mazur: Terminologia techniczna, WNT, Warszawa 1961 rok.</p> <p>S. Niziński: Eksploatacja obiektów technicznych, Biblioteka problemów eksploatacji, Radom 2002 rok.</p> <p>S. Niziński, H. Pelc: Diagnostyka urządzeń technicznych, WNT, Warszawa 1980 rok.</p> <p>L. Sitnik: Kinetyka zużycia, Wydawnictwo Naukowe PWN, Warszawa 1998 rok.</p> <p>J.K. Włodarski: Podstawy eksploatacji maszyn okrętowych, Akademia Morska, Gdynia 2006 rok.</p> <p>B. Żółtowski: Leksykon diagnostyki technicznej, ATR Bydgoszcz 1996 rok.</p>										
	Supplementary literature											
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Podstawy eksploatacji maszyn i urządzeń energetycznych, L, EN, sem. 5, zima 22/23 (PG_00042066) - Moodle ID: 25233 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=25233</p> <p>Podstawy eksploatacji maszyn i urządzeń energetycznych, L, EN, sem. 5, zima 22/23 (PG_00042066) - Moodle ID: 25233 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=25233</p>										

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable