



Subject card

Subject name and code	, PG_00056324						
Field of study	Ocean Engineering						
Date of commencement of studies	October 2022	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	3	Language of instruction			Polish		
Semester of study	6	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. Daniel Piątek				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	30.0	0.0	45
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13349						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	
	Number of study hours	45		6.0		49.0	
Subject objectives	ability to design electric and hydraulic drive systems in marine applications						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems		The student is able to design the structure of the electric / hydraulic system and select its components		[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information		
	[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of ocean technology objects and systems		The student knows the principles of operation of marine electrical and hydraulic systems		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems		The student is able to optimize the functioning of the electric / hydraulic drive system		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U03] can use computer-aided design, production and operation tools for ocean technology objects and systems		The student is able to create simple spreadsheets for calculating layouts, graphic programs for documentation and internet resources for the selection of elements		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		

Subject contents	<p>PROJECT: design of a propulsion system for a vessel using electric and hydraulic power transmission, hybrid systems; - loading conditions (similar units, sea conditions); - system structure (electrical diagram, hydraulic diagram); - calculations and selection of the main elements of the systems (generators, electric motors, pumps, hydraulic motors); - selection of control system elements (energy converters, distributors and valves); - comparison of technical and operational parameters of the electric and hydraulic systems; - applications, technical documentation;</p> <p>LABORATORY: tests of power flow in the marine propulsion system with hydraulic and electric power transmission; - construction of laboratory stands; - arrangement of measuring elements; - power flow and system losses; - preparation of spreadsheets for the development of results; - quantitative and qualitative study of research results; - conclusions;</p>											
Prerequisites and co-requisites	basic knowledge of electric and hydraulic drive											
Assessment methods and criteria	<table border="1" data-bbox="448 651 1497 757"> <thead> <tr> <th data-bbox="448 651 798 689">Subject passing criteria</th> <th data-bbox="802 651 1141 689">Passing threshold</th> <th data-bbox="1145 651 1497 689">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 689 798 728">laboratory - raport</td> <td data-bbox="802 689 1141 728">60.0%</td> <td data-bbox="1145 689 1497 728">50.0%</td> </tr> <tr> <td data-bbox="448 728 798 757">project - project</td> <td data-bbox="802 728 1141 757">60.0%</td> <td data-bbox="1145 728 1497 757">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	laboratory - raport	60.0%	50.0%	project - project	60.0%	50.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. Stryczek St.: Napęd hydrostatyczny, tom I Elementy, WNT Wa-wa. 2003 2. Stryczek St.: Napęd hydrostatyczny, tom II Układy, WNT Wa-wa. 2003 3. Szydelski Zb.: Napęd i sterowanie hydrauliczne, WKŁ WNT W - wa. 1999 4. Paszota Z.: Energy losses in hydrostatic drive, LAP LAMBERT Academic Publishing, Mauritius 2017</p> <p>catalogs of manufacturers of components for power hydraulics and electric drives</p> <p>Adresy na platformie eNauczanie:</p>										
Example issues/ example questions/ tasks being completed												
Work placement	Not applicable											