



## Subject card

Subject name and code	Power Hydraulics, PG_00045058						
Field of study	Ocean Engineering, Ocean 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	4	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Faculty of Ocean Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Daniel Piątek					
	Teachers	dr inż. Daniel Piątek					
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						
	Address on the e-learning platform: <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=9694">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=9694</a> Adresy na platformie eNauczanie: Hydraulika Siłowa, L, OCE, sem 4, lato 2021/22, (PG_00045058) - Moodle ID: 22597 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597</a> Hydraulika Siłowa, L, OCE, sem 4, lato 2021/22, (PG_00045058) - Moodle ID: 22597 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597</a>						
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	Knowledge of the operation principles of hydrostatic drive of machines, widely applied in drive and control of ocean technology and ship equipment						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U03] can use computer-aided design, production and operation tools for ocean technology objects and systems	As part of the design of the hydraulic system, the student is able to create simple spreadsheets to facilitate calculations and use the sources of information available on the Internet			[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[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 is able to optimize the functioning structure of the hydrostatic system			[SW3] Assessment of knowledge contained in written work and projects		
	[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 a hydrostatic system and select its elements			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	<p>LECTURES: Basic properties of the hydrostatic drive and control; displacement machines; working fluids; hydraulic flows of viscous fluid; drive and control elements; hydrostatic transmissions; classification and graphical symbols of hydrostatic system elements; pressure and flow intensity control valves; pumps and hydraulic motors used in hydrostatic drives; throttling control of hydraulic motor speed in the individual and group systems.</p> <p>LABORATORY: Filters, conduits, joints, seals; flow in the straight conduit; determination of throttling valve characteristics; valves in hydraulic systems; characteristics of the overflow valves; slid directional valve; pumps and hydraulic motors; testing of the displacement pump energy efficiency.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture - test	60.0%	50.0%
	laboratory - report	60.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Stryczek St.: Napęd hydrostatyczny, tom I Elementy, WNT W - wa. 2003</li> <li>2. Stryczek St.: Napęd hydrostatyczny, tom II Układy, WNT W - wa. 2003</li> <li>3. Szydelski Zb.: Napęd i sterowanie hydrauliczne, WKŁ WNT W - wa. 1999</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Pizoń A.: Elektrohydrauliczne analogowe i cyfrowe układy automatyki, WNT WNT W - wa. 1995</li> <li>2. Garbacik A.: Studium projektowania układów hydraulicznych, Ossolineum, Wrocław, W - wa. Kraków, 1997</li> <li>3. Palczak E.: Dynamika elementów i układów hydraulicznych, Ossolineum, Wrocław, W - wa. Kraków, 1997</li> <li>4. Paszota Z.: Aspects énergétiques des transmissions hydrostatiques, W.P.G. Gdańsk 2002.</li> </ol>	
	eResources addresses	<p>Hydraulika Siłowa, L, OCE, sem 4, lato 2021/22, (PG_00045058) - Moodle ID: 22597  <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597</a></p> <p>Hydraulika Siłowa, L, OCE, sem 4, lato 2021/22, (PG_00045058) - Moodle ID: 22597  <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22597</a></p>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		