



Subject card

Subject name and code	Hydraulics and Pneumatics, PG_00039310						
Field of study	Medical and Mechanical Engineering, Medical and Mechanical Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022		
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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Mechanics and Mechatronics -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Paweł Śliwiński					
	Teachers	dr hab. inż. Paweł Śliwiński dr inż. Marcin Bąk					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	8.0	7.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Hydraulika i Pneumatyka (IMM) - Moodle ID: 17810 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17810 Hydraulika i Pneumatyka, L, IMM, sem. 03, zimowy 21/22 (M:31671W0) - Moodle ID: 18186 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18186 Hydraulika i Pneumatyka, C, IMM, sem. 03, zimowy 21/22 (M:31671W0) - Moodle ID: 18187 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18187						
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	40.0	75		
Subject objectives	Knowledge of physical phenomena, principles of design and operation of hydraulic and pneumatic drive and control systems						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W07				[SW1] Assessment of factual knowledge		
	K6_U05				[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_U07				[SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	<p>1. Viscosity, laminar and turbulent flow, Bernoulli law, the Reynolds number.</p> <p>2. Flow in pipes, and in throttle elements.</p> <p>3. Construction and operation of hydraulic and pneumatic components - pumps, motors and valves.</p> <p>4. Basic parameters of pumps and hydraulic motors. Losses and efficiency.</p> <p>5. Hydraulic system with throttle valve.</p> <p>6. Volumetric systems.</p>														
Prerequisites and co-requisites	Physics														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 622 794 651">Subject passing criteria</th> <th data-bbox="799 622 1137 651">Passing threshold</th> <th data-bbox="1142 622 1481 651">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 658 794 687">exercises</td> <td data-bbox="799 658 1137 687">0.0%</td> <td data-bbox="1142 658 1481 687">20.0%</td> </tr> <tr> <td data-bbox="456 694 794 723">test after lecture</td> <td data-bbox="799 694 1137 723">56.0%</td> <td data-bbox="1142 694 1481 723">60.0%</td> </tr> <tr> <td data-bbox="456 730 794 759">laboratory</td> <td data-bbox="799 730 1137 759">56.0%</td> <td data-bbox="1142 730 1481 759">20.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	exercises	0.0%	20.0%	test after lecture	56.0%	60.0%	laboratory	56.0%	20.0%
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Example issues/ example questions/ tasks being completed															
Work placement	Not applicable														