



Subject card

Subject name and code	Hydraulics and Pneumatics, PG_00040066							
Field of study	Mechanical Engineering, Mechanical 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	Part-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			exam			
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					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM	
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30	
	E-learning hours included: 0.0							
Hydraulika i pneumatyka - Moodle ID: 24535 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24535								
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	Learning about physical phenomena, structure and principles of operation of basic hydraulic and pneumatic elements and systems							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle					[SW1] Assessment of factual knowledge		
[K6_U07] is able to design a typical construction of a mechanical device, component or a testing station using appropriate methods and tools, adhering to the set usage criteria					[SU3] Assessment of ability to use knowledge gained from the subject			
Subject contents	LECTURE: Structure of hydraulic and pneumatic drive and control. Properties of hydraulic fluids and air. Pressure losses and their calculation. Flow through clearances. Basic elements of hydraulic and pneumatic systems: pumps, motors, cylinders, valves, filters, compressed air units. Basic calculations of hydraulic and pneumatic drive systems. LABORATORY: Practical knowledge of structure and operation of hydraulic and pneumatic components. Assembly of basic units.							
Prerequisites and co-requisites	Physics							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory	56.0%	34.0%
	test after lecture	56.0%	66.0%
Recommended reading	Basic literature	1. Osiecki A.: Hydrostatyczny napęd maszyn. WNT, Warszawa 1998 2. Szejnach W.: Napęd i sterowanie pneumatyczne. WNT, Warszawa 1997 3. Balawender A. et al: Laboratorium napędów hydraulicznych. Część 1. Podstawy hydrauliki. Gdańsk 1996 4. Niegoda J., Pomierski W.: Sterowanie pneumatyczne. Ćwiczenia laboratoryjne. Skrypt PG, Gdańsk 1998	
	Supplementary literature	1. Dindorf R.: Napędy płynowe. Podstawy teoretyczne i metody obliczania napędów hydraulicznych i pneumatycznych. Wydawnictwo Politechniki Świętokrzyskiej. Kielce 2009	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		