

## 关。GDAŃSK UNIVERSITY 多 OF TECHNOLOGY

## 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	ïrst-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							Technology	
Name and surname	Subject supervisor		dr hab. inż. Paweł Śliwiński						
of lecturer (lecturers)	Teachers		dr hab. inż. Paweł Śliwiński						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	15.0	0.0	15.0	0.0		0.0	30	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation i classes incluc 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 out	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 knowlege 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	<ol> <li>Osiecki A.: Hydrostatyczny napęd maszyn. WNT, Warszawa 1998</li> <li>Szejnach W.: Napęd i sterowanie pneumatyczne. WNT, Warszawa 1997</li> <li>Balawender A. et al: Laboratorium napędów hydraulicznych. Część</li> <li>Podstawy hydrauliki. Gdańsk 1996</li> <li>Niegoda J., Pomierski W.: Sterowanie pneumatyczne. Ćwiczenia laboratoryjne. Skrypt PG, Gdańsk 1998</li> </ol>			
	Supplementary literature	<ol> <li>Dindorf R.: Napędy płynowe. Podstawy teoretyczne i metody obliczania napędów hydraulicznych i pneumatycznych.Wydawnictwo Politechniki Świętokrzyskiej. Kielce 2009</li> </ol>			
	eResources addresses	Adresy na platformie eNauczanie: Hydraulika i pneumatyka - Moodle ID: 24535 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24535			
Example issues/ example questions/ tasks being completed					
Work placement	Not applicable				