

## GDAŃSK UNIVERSITY

## Subject card

Subject name and code	Hydraulics and pneumatics, PG_00055062								
Field of study	Management and Production Engineering								
Date of commencement of studies	October 2023		Academic year of realisation of subject			2024/2025			
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	4		ECTS credits			3.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology							echnology	
Name and surname	Subject supervisor		dr hab. inż. Paweł Śliwiński						
of lecturer (lecturers)	Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	15.0	0.0		0.0	45	
	E-learning hours included: 0.0								
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		4.0		26.0		75	
Subject objectives	Acquainting with physical phenomena, the basics of design and operation of hydraulic and pneumatic drive and control systems								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_W04] has basic knowledge in the field of automation, robotics and control of production processes, has elementary knowledge of electrical and electronic applications in the production system, has basic knowledge of thermodynamics and fluid mechanics as well as the selection and design of hydraulic and pneumatic systems					[SW1] Assessment of factual knowledge			
	[K6_K01] feels the need for self- realization by learning throughout life, is looking for modern and innovative solutions in their actions, is able to think creatively and act in an entrepreneurial way [K6_U02] has the ability of self- learning and expanding knowledge in a specialized field of engineering production					[SK3] / organiz [SK5] / solve p practic [SK2] / work [SU2] / analyse [SU4] / use me	Assessment of ze work Assessment of roblems that e Assessment of Assessment of Assessment of ethods and to	of ability to of ability to arise in of progress of of ability to of ability to ols	

Subject contents	LECTURE: Structure of hydraulic and pneumatic drive and control. Properties of working fluid and air pressure losses in the institution and their calculation. Flows through the slots. Basic elements and hydrostatic and pneumatic systems of machines: pumps, motors, actuators, valves, filters, accumulators, compressed air units. Special electrohydraulic and electropneumatic machine automation systems.TUTORIALS: Basic calculations of hydraulic and pneumatic drive systems.LABORATORIES: Practical familiarization with the structure and operation of hydraulic and pneumatic elements as well as self-assembly of basic systems.						
Prerequisites and co-requisites	Physics						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	Lecture pass	56.0%	66.0%				
	Laboratory pass	56.0%	34.0%				
Recommended reading	Basic literature	<ol> <li>Osiecki A.: Hydrostatyczny napęd maszyn. WNT, Warszawa</li> <li>Szejnach W.: Napęd i sterowanie pneumatyczne. WNT, Warszawa 1997</li> <li>Balawender A. i inni: Laboratorium napędów hydraulicznych Część 1. Podstawy hydrauliki. Gdańsk 1996</li> <li>Niegoda J., Pomierski W.: Sterowanie pneumatyczne. Ćwic laboratoryjne. Skrypt PG, Gdańsk 1998</li> </ol>					
	Supplementary literature	Dindorf R.: Napędy płynowe. Podstawy teoretyczne i metody napędów hydraulicznych i pneumatycznych.Wydawnictwo Po Świętokrzyskiej. Kielce 2009					
	eResources addresses	Adresy na platformie eNauczanie:					
Example issues/ example questions/ tasks being completed							
Work placement	Not applicable						