



Subject card

Subject name and code	Hydraulics and pneumatics for Management and Production Engineering, PG_00039951						
Field of study	Management and Production Engineering, Management and Production 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	4	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Leszek Osiecki					
	Teachers	dr hab. inż. Leszek Osiecki dr inż. Paweł Załuski					
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 Adresy na platformie eNauczanie:						
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	4.0		16.0		50
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_U01	The student analyzes the principles of operation, application and exploitation of hydraulic and pneumatic systems for drives and automation of machines and devices.			[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W04	The student analyzes the principles of operation, application and exploitation of hydraulic and pneumatic systems for drives and automation of machines and devices.			[SW1] Assessment of factual knowledge		
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.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 style="list-style-type: none"> 1. Osiecki A.: Hydrostatyczny napęd maszyn. WNT, Warszawa 1998 2. Szejnach W.: Napęd i sterowanie pneumatyczne. WNT, Warszawa 1997 3. Baławender A. i inni: Laboratorium napędów hydraulicznych. Część 1. Podstawy hydrauliki. Gdańsk 1996 4. Niegoda J., Pomierski W.: Sterowanie pneumatyczne. Ćwiczenia laboratoryjne. Skrypt PG, Gdańsk 1998
	Supplementary literature	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	