GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Hydraulics and Pneumatics, PG_00039888
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	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam

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 inż. Marcin Bąk; dr hab. inż. Leszek Osiecki; dr inż. Piotr Patrosz

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	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	6.0	49.0	100

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_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	The student acquires knowledge about the principles of operation, application and exploitation of hydraulic and pneumatic drive and control systems	[SU1] Assessment of task fulfilment
	[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	The student acquires knowledge about the principles of operation, application and exploitation of hydraulic and pneumatic drive and control systems	[SW1] Assessment of factual knowledge

Subject contents	LECTURE:Structure of hydraulic and pneumatic drive and control. Properties of working fluid and air. System pressure losses and their calculation. Flows through the clearances. Basic elements and hydrostatic and pneumatic systems of machines: pumps, motors, actuators, valves, filters, accumulators, compressed air units. 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
	Final exam	56.0%	66.0%
	Laboratory pass	56.0%	34.0%

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. 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	1. Dindorf R.: Napędy płynowe. Podstawy teoretyczne i metody obliczania napędów hydraulicznych i pneumatycznych.Wydawnictwo Politechniki Świętokrzyskiej. Kielce 2009
	eResources addresses	Adresy na platformie eNauczanie: Hydraulika i Pneumatyka, L, MiBM, sem. 05, zimowy 22/23 (M: 31546W0) - Moodle ID: 26726 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26726
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	