GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Construction and exploitation of hydraulic devices, PG_00040101		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Optional subject group 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	6	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Zakład Hydrauliki i Pneumatyki -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Paweł Śliwiński	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	22.0	0.0	15.0	0.0	0.0	37

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	37	11.0	77.0	125

Subject objectives

Learning the principles of operation and diagnosis of hydraulic systems

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools	The student can analyze and explain the phenomena occurring in the basic elements of the hydraulic system.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[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 can explain the structure and operation of the basic elements of the hydraulic system and determine the proper operating conditions of these elements.	[SW1] Assessment of factual knowledge

Subject contents	1. Measurements in the laboratory of hydraulics and pneumatic systems for data collection and measurement. 2. Wear of the machinery components and monitoring of oil. 3. Preparation of the hydraulic system to operate. 4. Methods for determining of pressure losses in the internal channels of pump and hydraulic and pneumatic motor. 5. Determination of the theoretical displacement of hydraulic and pneumatic machine. 6. Methods of testing the motor and the pump at a constant low speed. Starting torque. 7. Methods of description of the losses in hydraulic and pneumatic motors. 8. Methods of testing of the hydraulic and pneumatic systemscomponents at low ambient temperatures. 9. Methodology of the testing of the seals in the reciprocating and rotary motion. 10. Methods of dewatering oil. Methods for determining the amount of water in oil. 11. Method of the thermal monitoring and diagnosis of hydraulic devices.
Prerequisites and co-requisites	No requirements.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	56.0%	25.0%
Lecture	56.0%	75.0%

Recommended reading	Basic literature	1. A. Osiecki, Hydrostatyczny napęd maszyn, WNT, W-wa 1998. 2. A. Balawender and others, Laboratorium napędów hydraulicznych. Part 1. Podstawy hydrauliki. Wyd. IMP PAN, Gdańsk 1996. 3. S. Stryczek, Napęd hydrostatyczny, volume I i II, WNT, W-wa 1997.
	Supplementary literature	There is no requirement.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Given during the course	
Work placement	Not applicable	