



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	<p>1. Measurements in the laboratory of hydraulics and pneumatic systems for data collection and measurement.</p> <p>2. Wear of the machinery components and monitoring of oil.</p> <p>3. Preparation of the hydraulic system to operate.</p> <p>4. Methods for determining of pressure losses in the internal channels of pump and hydraulic and pneumatic motor.</p> <p>5. Determination of the theoretical displacement of hydraulic and pneumatic machine.</p> <p>6. Methods of testing the motor and the pump at a constant low speed. Starting torque.</p> <p>7. Methods of description of the losses in hydraulic and pneumatic motors.</p> <p>8. Methods of testing of the hydraulic and pneumatic systems components at low ambient temperatures.</p> <p>9. Methodology of the testing of the seals in the reciprocating and rotary motion.</p> <p>10. Methods of dewatering oil. Methods for determining the amount of water in oil.</p> <p>11. Method of the thermal monitoring and diagnosis of hydraulic devices.</p>											
Prerequisites and co-requisites	No requirements.											
Assessment methods and criteria	<table border="1" data-bbox="450 1068 1489 1171"> <thead> <tr> <th data-bbox="450 1068 794 1099">Subject passing criteria</th> <th data-bbox="794 1068 1139 1099">Passing threshold</th> <th data-bbox="1139 1068 1489 1099">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="450 1099 794 1131">Laboratory</td> <td data-bbox="794 1099 1139 1131">56.0%</td> <td data-bbox="1139 1099 1489 1131">25.0%</td> </tr> <tr> <td data-bbox="450 1131 794 1171">Lecture</td> <td data-bbox="794 1131 1139 1171">56.0%</td> <td data-bbox="1139 1131 1489 1171">75.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Laboratory	56.0%	25.0%	Lecture	56.0%	75.0%
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Laboratory	56.0%	25.0%										
Lecture	56.0%	75.0%										
Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. A. Osiecki, Hydrostatyczny napęd maszyn, WNT, W-wa 1998.</p> <p>2. A. Balawender and others, Laboratorium napędów hydraulicznych. Part 1. Podstawy hydrauliki. Wyd. IMP PAN, Gdańsk 1996.</p> <p>3. S. Stryczek, Napęd hydrostatyczny, volume I i II, WNT, W-wa 1997.</p> <p>There is no requirement.</p> <p>Adresy na platformie eNauczanie:</p>										
Example issues/ example questions/ tasks being completed	Given during the course											
Work placement	Not applicable											