



Subject card

Subject name and code	Exploitation of mechatronics devices, PG_00057021						
Field of study	Mechatronics						
Date of commencement of studies	February 2022	Academic year of realisation of subject			2021/2022		
Education level	second-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	1	Language of instruction			Polish		
Semester of study	1	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. Ryszard Jasiński				
	Teachers		dr hab. inż. Ryszard Jasiński				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	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	30		4.0		16.0	50
Subject objectives	To acquaint students with the operation of typical mechatronic devices						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W07] has basic knowledge on lifecycle of devices, objects and technical systems		The student has basic knowledge about the life cycle of technical devices, facilities and systems as well as the ability to assemble some mechatronic devices and systems.		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_K02] understand the need for formulating and communicate to the society information and opinions concerning mechatronic achievements and non-technical aspects of mechatronics engineer work; makes effort to communicate these information and opinions in widely understandable manner, representing various points of view		The student understands the need to formulate and transmit to the public information and opinions on the achievements of mechatronics and non-technical aspects of mechatronics engineer activity.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W02] has organised, general, supported by the theory knowledge in terms of systems theory and techniques, mechatronic design, mechatronic systems and exploitation of mechatronic devices		The student is able to identify and formulate the specification of tasks in the field of designing mechatronic devices.		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_W10] knows development trends and most important new achievements in technical sciences and science disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering and related: Informatics and Materials Engineering		The student knows the development trends and the most important new achievements in the field of technical sciences and scientific disciplines: Mechanical Engineering and Automation, Electronics and Electrical Engineering, appropriate for the field of Mechatronics studies. The student has knowledge of mechatronic design.		[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	Introduction to the operation of mechatronic devices. Diagnostics of hydraulic (hydrotronic) systems. Measurement systems. Hydraulic fluids. Operation of hydraulic systems (hydrotronic). First start of the hydraulic system (hydrotronic). Cleaning the hydraulic system (hydrotronic) from contamination (rinsing the hydraulic system). Operation of hydraulic (hydrotronic) devices and systems in various environmental conditions. Methods for determining the parameter areas of the correct or incorrect operation of the unit and the hydraulic (hydrotronic) system. Safe commissioning and operation of mechatronic machines and devices. Directives on the safety of machinery and work protection for users. Responsibility for a dangerous product. Identification of threats. Safe design. Technical protective measures. Safe work with mechatronic devices and systems.											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="453 367 794 398">Subject passing criteria</th> <th data-bbox="794 367 1139 398">Passing threshold</th> <th data-bbox="1139 367 1485 398">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 398 794 430"></td> <td data-bbox="794 398 1139 430">56.0%</td> <td data-bbox="1139 398 1485 430">50.0%</td> </tr> <tr> <td data-bbox="453 430 794 461"></td> <td data-bbox="794 430 1139 461">56.0%</td> <td data-bbox="1139 430 1485 461">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade		56.0%	50.0%		56.0%	50.0%
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Recommended reading	Basic literature	<p data-bbox="799 479 1027 510">Podstawowa lista lektur</p> <ol data-bbox="799 577 1481 1585" style="list-style-type: none"> <li data-bbox="799 577 1481 629">1. James B. Hannon, ExxonMobil Corporation, Performance evaluation of new and in-service turbine oils. Practicing Oil Analysis Magazine <li data-bbox="799 680 1481 732">2. Przewodnik Bezpieczne Maszyny. Bezpieczna maszyna w sześciu krokach. SICK <li data-bbox="799 784 1481 835">3. Jarosław Biały, Marian J. Łopatka: Wybrane problemy doboru czynnika roboczego w hydrostatycznych układach napędu i sterowania <li data-bbox="799 887 1481 916">4. Vademecum hydrauliki, Rexroth, Tom I, II, III <li data-bbox="799 967 1481 1048">5. Jasiński R.: Działanie wybranych wolnoobrotowych silników hydraulicznych w warunkach szoku termicznego. Rozprawa doktorska. Politechnika Gdańska, Wydz. Mechaniczny, Gdańsk 2002. <li data-bbox="799 1099 1481 1180">6. Jasiński R.: Funkcjonowanie zespołów napędu hydraulicznego maszyn w niskich temperaturach otoczenia. Monografia 166, Gdańsk 2018. <li data-bbox="799 1232 1481 1283">7. Szenajch W.: Napęd i sterowanie pneumatyczne. WNT Warszawa 1997. <li data-bbox="799 1335 1481 1386">8. Niegoda J., Pomierski W.: Sterowanie pneumatyczne. Skrypt PG. Gdańsk 1998. <li data-bbox="799 1438 1481 1489">9. Schmid D. i inni: Mechatronika, ISBN 83-7141-425-0, Warszawa 2002. <li data-bbox="799 1541 1481 1592">10. Praca zbiorowa: Urządzenia i systemy mechatroniczne. Cz.1, 2. Wydawnictwo REA, 2009 										
	Supplementary literature	<ol data-bbox="799 1628 1481 2085" style="list-style-type: none"> <li data-bbox="799 1628 1481 1680">1. Osiecki A.: Napęd i sterowanie hydrauliczne maszyn. Teoria, obliczanie i układy. Skrypt PG, Gdańsk 1995. <li data-bbox="799 1731 1481 1783">2. Osiecki A.: Hydrostatyczny napęd maszyn. WNT Warszawa 1998. <li data-bbox="799 1834 1481 1886">3. Stryczek S.: Napęd hydrostatyczny. Tom I Elementy. Tom II Układy. WNT Warszawa 1990. <li data-bbox="799 1937 1481 1995">4. Heiman B., Gerth W., Popp K.: Mechatronika, metody, przykłady, tł. Gawrysiak M., Wydawnictwo Naukowe PWN, Warszawa, 2001. <li data-bbox="799 2047 1481 2085">5. Gawrysiak M.: Mechatronika i projektowanie mechatroniczne, Rozprawy Naukowe Nr 44, Polit. Białostocka, Białystok, 1997 										

	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	