



Subject card

Subject name and code	Mechatronics, PG_00055398						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
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			3.0		
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. Piotr Mioduszewski					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60	3.0	12.0	75		
Subject objectives	Providing students with essential knowledge about mechatronics as well as design methods, modelling and exploitation of mechatronic systems						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W06] possesses elementary knowledge on automatics and robotics of mechanical systems	Student analyses control systems for mechatronic devices			[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U05] is able to plant an experiment within the range of measuring the basic operating parameters of mechanical devices using a specialized equipment, interpret the results and reach the correct conclusions	Student models and programs measurement and control systems for mechatronic devices			[SU1] Assessment of task fulfilment		
	[K6_W10] possesses basic knowledge on electronics and electrical engineering	Student applies theoretically supported, general knowledge in the field of electrotechnics and electronics in the design of mechatronic systems			[SW1] Assessment of factual knowledge		

Subject contents	<p>Basic definitions in the field of mechatronics</p> <p>Essential problems of mechatronics design</p> <p>Interdisciplinary approach to mechatronics design.</p> <p>Methods and examples of mechatronic design</p> <p>Integration of mechanics, electrotechnics, electronics, hydraulics, actuators, controls and software in mechatronic systems</p> <p>Signal processing and analysis .</p> <p>Modelling of mechatronic systems elements.</p> <p>Design and exploitation of mechatronics systems</p> <p>Functions and functionality of modules and elements of mechatronic systems</p> <p>Laboratory:</p> <ul style="list-style-type: none"> - modelling of mechatronic systems elements - mechatronic actuators - programming of the didactic mechatronic system 											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="454 1294 794 1323">Subject passing criteria</th> <th data-bbox="799 1294 1139 1323">Passing threshold</th> <th data-bbox="1144 1294 1482 1323">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 1330 794 1359">Written test</td> <td data-bbox="799 1330 1139 1359">55.0%</td> <td data-bbox="1144 1330 1482 1359">60.0%</td> </tr> <tr> <td data-bbox="454 1366 794 1413">Finishing of tasks given during laboratory classes</td> <td data-bbox="799 1366 1139 1413">55.0%</td> <td data-bbox="1144 1366 1482 1413">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Written test	55.0%	60.0%	Finishing of tasks given during laboratory classes	55.0%	40.0%
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Written test	55.0%	60.0%										
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Recommended reading	Basic literature	Heimann B., Gerth W., Popp K.: Mechatronika. Komponenty metody przykłady. Warszawa: Wyd. Nauk. PWN 2001. Gawrysiak M.: Mechatronika i projektowanie mechatroniczne. Białystok: Wyd. Polit. Białostockiej 1997 (dostępna w internecie).										
	Supplementary literature	Kaliński K.: Nadzorowanie procesów dynamicznych w układach mechanicznych. Gdańsk: Wydawnictwo Politechniki Gdańskiej 2012. Petko M.: Wybrane metody projektowania mechatronicznego. Wydawnictwo Naukowe Instytutu Technologii Eksploatacji. Radom 2008.										
	eResources addresses											
Example issues/ example questions/ tasks being completed	Exemplary questions / tasks will be presented to the student at least 4 weeks ahead of the final tests.											
Work placement	Not applicable											