



Subject card

Subject name and code	Mechatronics, PG_00055398						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject			2025/2026	
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_W10] possesses knowledge on electronics and electrical engineering		Student applies theoretically supported, general knowledge in the filed of electrotechnics and electronics in the design of mechatronic systems			[SW1] Assessment of factual knowledge	
	[K6_W06] possesses 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	

Subject contents	Basic definitions in the field of mechatronics		
	Essential problems of mechatronics design		
	Interdisciplinary approach to mechatronics design.		
	Methods and examples of mechatronic design		
	Integration of mechanics, electrotechnics, electronics, hydraulics, actuators, controls and software in mechatronic systems		
	Signal processing and analysis .		
	Modelling of mechatronic systems elements.		
	Design and exploitation of mechatronics systems		
	Functions and functionality of modules and elements of mechatronic systems		
	Laboratory:		
	- modelling of mechatronic systems elements		
	- mechatronic actuators		
	- programming of the didactic mechatronic system		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Finishing of tasks given during laboratory classes	55.0%	40.0%
	Written test	55.0%	60.0%
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	Adresy na platformie eNauczanie:	
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		

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