



## Subject card

Subject name and code	Mechatronics, PG_00047603						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
Education level	first-cycle studies	Subject group				Optional subject group 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				exam	
Conducting unit	Department of Automatic Control -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Piotr Fiertek				
	Teachers		dr inż. Piotr Fiertek				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	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		3.0		42.0	75
Subject objectives	Introduction to mechatronics and nanotechnology. Introduction to industrial automation.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[[K6_W02] knows and understands, to an advanced extent, selected laws of physics and physical phenomena as well as methods and theories explaining the complex relationships between them, constituting the basic general knowledge in the field of technical sciences related to the field of study		The student learned about the methods of operation of sensors used in automation and mechatronics, including various types of vision sensors. The student got acquainted with the basics of intelligent energy, construction and operation of micro-mechatronic devices (eg MEMS sensors),			[SW1] Assessment of factual knowledge	
Subject contents	Course content – lecture Basic concepts, Introduction to mechatronics. Directions of integration and classification of mechatronic systems. Designing mechatronic systems. Overview of sensors used in automation and mechatronics, including optical sensors (eg vision systems). Classification and overview of typical actuators including electrical, electromechanical and electromagnetic actuators as well as hydraulic and pneumatic actuators. Electric motor control, review of electrical devices used in industrial automation, reading electrical documentation, PLC programming, electromobility, autonomous vehicles and ADAS systems, elements of intelligent energy, micro-technologies (MEMS), aerial robots, navigation systems, predictive maintenance, industry 4.0						
Prerequisites and co-requisites	brak						
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
	Exam + presence (5%)		60.0%			100.0%	

Recommended reading	Basic literature	<p>1. Podstawy mechatroniki „ Turowski Janusz, 2008</p> <p>2. P Marek Gawrysiak, „Mechatronika i projektowanie mechatroniczne”, Białystok 1997</p> <p>3. „Podstawy mechatroniki” – Podręcznik dla uczniów średnich i zawodowych szkół technicznych Warszawa 2006</p> <p>4. „Urządzenia i systemy mechatroniczne część 1“ Agnieszka Grzybek, red. Stanisław Grzybek Rea, Warszawa 2009</p>
	Supplementary literature	„Urządzenia i systemy mechatroniczne część 2“ Agnieszka Grzybek, red. Stanisław Grzybek, Warszawa 2009
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Practical activities within the subject	Not applicable	

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