GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mechatronics II, PG_00047619		
Field of study	Automatic Control, Cybernetics and Robotics		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
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	6	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department Of Mechanics And Mechatronics -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Rafał Hein	
	Teachers	dr hab. inż. Ryszard Jasiński	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	15.0	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	3.0	42.0	75

Subject objectives

The aim of the course is to acquire practical skills in designing and building hydraulic, pneumatic, electric, mechanical and mechatronic control systems. The subject consists of the design and laboratory parts. In the design part, students carry out assigned theoretical projects, and in the laboratory part, they carry out practical tasks for controlling mechatronic systems.

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 has knowledge in mechanics, construction and operation of machines, electronics, automation and control as well as understands the laws and phenomena occurring at the stage of operation of the products and production processes designed by him.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation

<table>
<tr><td>Subject contents</td><td>The design part includes the plan of mechatronic system.

The following topics are realised in the laboratory part:

Synthesis and analysis of combinational and sequential logical control systems.

PLC programming in the application to the sequential control systems.

Laboratory investigation of servo-mechanism with state variable feedback.

Laboratory research of temperature control system using PID controller and D/A, A/D converter.

PLC programming module of assembly system MAS-200.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Ability to synthesize combinational and sequential control systems. Knowledge of languages and the basics of PLC and microcontroller programming. Basic knowledge of measurement systems, including the operation of physical quantity sensors and actuators.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project</td><td>56.0%</td><td>50.0%</td></tr>
<tr><td>Practical exercise</td><td>56.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1. Heiman B., Gerth W., Popp K.: Mechatronika, metody, przykłady, tł. Gawrysiak M., Wydawnictwo Naukowe PWN, Warszawa, 2001

2. Gawrysiak M.: Mechatronika i projektowanie mechatroniczne, Rozprawy Naukowe Nr 44, Polit. Białostocka, Białystok, 1997

3. Schmid D. i inni: Mechatronika, ISBN 83-7141-425-0, Warszawa 2002</td></tr>
<tr><td>Supplementary literature</td><td>1. Catalogues from FESTO, SMC, Rexroth, Siemens, Simex</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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