



Subject card

Subject name and code	Automation and Robotics, PG_00060459						
Field of study	Mechanical and Naval Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
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	Part-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Mohammad Ghaemi					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	18.0	9.0	9.0	0.0	0.0	36
	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	36	8.0	81.0	125		
Subject objectives	The aim is to get acquainted with the basis of control theory and with the structures and elements of basic automation systems, as well as general information on the design of control systems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W06] possesses knowledge on automatics and robotics of mechanical systems	The student possesses knowledge in the field of basic control systems of mechanical control systems, including their operation, characteristics, parameters, and behaviour in both steady-state and transient states.			[SW1] Assessment of factual knowledge		
	[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	The student is able to plan an experiment in the field of identification of basic control systems, using specialized equipment, conduct an interpretation of the results, and draw appropriate conclusions.			[SU4] Assessment of ability to use methods and tools		

Subject contents	<p>Course content – lecture</p> <ol style="list-style-type: none"> 1. Introduction and basic concepts 2. Classification of control systems 3. Modeling of mechanical dynamical systems and description of their elements 4. Types of mathematical models of dynamical systems: differential equation, transfer function, block diagram, linearization 5. Transition function and time characteristics 6. Feedback closed-loop control system 7. Analysis of control systems in the plot of time and in the plot of frequency 8. Stability of linear control systems 9. Controllers 														
Prerequisites and co-requisites	<p>Prerequistes:</p> <ol style="list-style-type: none"> 1. Mathematics 2. Physics 														
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Subject passing criteria</th> <th style="width: 33%;">Passing threshold</th> <th style="width: 33%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Exercises</td> <td>50.0%</td> <td>25.0%</td> </tr> <tr> <td>Lecture</td> <td>50.0%</td> <td>50.0%</td> </tr> <tr> <td>Laboratory</td> <td>50.0%</td> <td>25.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Exercises	50.0%	25.0%	Lecture	50.0%	50.0%	Laboratory	50.0%	25.0%
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Recommended reading	Basic literature	Nise N. S., Control System Engineering , 8th Edition, John Wiley & Sons Inc., 2019.													
	Supplementary literature	<ul style="list-style-type: none"> - Friedland B., Control System Design, McGraw Hill Co., 1986. - Ogata K., Modern Control Engineering, 4th edition, Prentice-Hall, 2009. - Raven, F. H., Automatic control engineering, McGraw Hill Co., 1986. 													
	eResources addresses														
Example issues/ example questions/ tasks being completed															
Practical activities within the subject	Not applicable														

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