



Subject card

Subject name and code	Industrial PID control systems, PG_00059858						
Field of study	PRZEMYSŁOWE UKŁADY STEROWANIA PID						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group				
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		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Intelligent and Decision Support Systems -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Robert Piotrowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		10.0		45.0	100
Subject objectives	The aim of the course is for students to master the issues of PID control systems for selected objects/ processes. The topics will be a development of the content presented in the subject Fundamentals of Control Engineering I.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U04] has the ability to self-educate, among other things, in order to improve professional qualifications		Seeks information on applications of PID controllers in various structures.		[SU2] Ocena umiejętności analizy informacji		
	[K6_W11] knows the hazards arising from devices, installations, systems and technical systems, basic principles of occupational health and safety, taking into account the role of control and security systems in controlling automation and robotics facilities		Gives examples of the risks associated with control systems.		[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym		
	[K6_W06] knows the structure of computers and microprocessors and the tasks of operating systems, has basic knowledge of the basics of computer software, drivers, microprocessor technology, design of simple algorithms and the operation of information networks		Designs a PID controller for various digital devices.		[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym		
	[K6_W07] has basic knowledge related to control and automation systems		Draws a diagram of a control system with feedback.		[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym		
	[K6_K05] can think and act in an entrepreneurial way		Finds a research article in the subject area.		[SK2] Ocena postępów pracy		

Subject contents	Course content – lecture Lecture: 1. Control systems - design, tasks, examples 2. Characteristics of PID controllers, limitations of PID controllers 3. Selection of PID controller settings 4. PID control systems - hardware aspects 5. Examples of PID control systems Laboratory: 1. Analysis of the operation of the PID control system 2 Selection of PID controller settings Synthesis of PID control operation - Part 1. Synthesis of PID control operation - Part 2. 5. PID control systems in the hardware structure		
Prerequisites and co-requisites	Knowledge of the subject "Fundamentals of Control Engineering I"		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written pass	50.0%	65.0%
	laboratory - oral credit for topics	0.0%	35.0%
Recommended reading	Basic literature	1. Åström K.J., Hägglund T. PID Controllers: Theory, Design and Tuning. 2nd edition. Instrument Society of America, 1997. 2. Brzózka J. Regulatory i układy automatyki. Wydawnictwo MIKOM, 2004. 3. Franklin G.F., Powell J.D., Emami-Naeini A. Feedback Control of Dynamic Systems. 7th edition, Prentice Hall, 2014. 4. Holejko D., Kościelny W.J. Automatyka procesów ciągłych. Oficyna Wydawnicza Politechniki Warszawskiej, 2012. 5. Visioli A. Practical PID Control. Springer, 2006.	
	Supplementary literature	1. Brzózka J. Regulatory cyfrowe w automatyce. Wydawnictwo MIKOM, 2002. 2. Byrski W. Obserwacja i sterowanie w systemach dynamicznych. Uczelniane Wydawnictwa Naukowo Dydaktyczne Akademii Górniczo Hutniczej w Krakowie, 2007. 3. Czemplik A. Modele dynamiki obiektów fizycznych. Wydawnictwa Naukowo Techniczne, 2008	
	eResources addresses		

Example issues/ example questions/ tasks being completed	1. List and characterise the input signals in a control system. 2. List and characterise the three settings of a PID controller.
Practical activities within the subject	Not applicable

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