



Subject card

Subject name and code	Automatics of Industrial Process, PG_00038276						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	second-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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Control Engineering -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Jacek Zawalich				
	Teachers		dr inż. Jacek Zawalich				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	10.0	10.0	0.0	40
	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	40		4.0		56.0	100
Subject objectives	The aim of the course is to develop the students' ability to design industrial automation systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K05] can think and act in an entrepreneurial way		Is aware of the role of man in the economy as an entrepreneur, employee or consumer.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_K04] is able to react in abnormal and emergency situations, health and life-threatening when use of automation and robotics components and systems		The student is able to inspect the work of the automatic control systems of the industrial processes and react properly in abnormal and emergency conditions, taking into account the hazards of life and health.		[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice		
	[K7_U08] has the necessary preparation to work in an industrial environment, carry out research, apply principles of health and safety at work		The student recognizes and describes threats coming from devices and control systems. The student designs technical systems containing appropriate security systems.		[SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	Course content – lecture Examples of industrial control systems, technical problems of their implementation, the formulation of goals and objectives for the process control system. Control models of real objects: analytic and behavioral. Types and ways of describing selected objects and their specific properties, static and dynamic characteristics. Analysis of delay objects. Methods for identifying industrial facilities. Control structure: open and closed systems, systems with feedback on the size of the output and the state of the process, the reference model, the estimator of the state. Types of industrial control devices: continuous PID controllers, controls two- and three-position correction, stepper controllers, fuzzy predictors. The implementation of software controllers. The technical implementation, selection of controls, their structures and technical parameters. Test and regulations. Communication and data transfer in the system automation, synchronization devices. Analysis of automation selected industrial processes (heating, drying, rewinding, packaging, mixing, transport, power flow control).						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	colloquium	60.0%	60.0%
	project	60.0%	40.0%
Recommended reading	Basic literature	1. Kaczorek T., : Linear Control Systems, vol.1 and 2, Research Studies Press and J. Wiley, New York 1993. 2. Phillips CL., Harbor RD.: Feedback Control Systems, Prentice Hall. 1996. 3. Rabbath C.A., Lechvin N.: Discrete-Time Control System Design with Application. Academic Press 1995	
	Supplementary literature	1. Goodwin GC., Graebe S.F., Salgado M.E.: Control Systems Design, Prentice Hall. 2001.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Types and methods of description selected objects and their specific properties. Methods for identifying industrial facilities. Types of industrial control devices: continuous PID controllers, controls two-and three-position correction		
Practical activites within the subject	Not applicable		

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