GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Automatics of industrial process, PG_00059838		
Field of study	Automation, Robotics and Control Systems		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2027/2028
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
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		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	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	5.0	15.0	50

Subject objectives

The aim of the course is to provide theoretical and practical knowledge in the field of designing automated technological processes in industrial conditions with the use of professional computer hardware and engineering software.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K05] can think and act in an entrepreneurial way		
[K7_K04] is able to react in abnormal and emergency situations, health and life-threatening when use of automation and robotics components and systems		
[K7_U08] has the necessary preparation to work in an industrial environment, carry out research, apply principles of health and safety at work		

Subject contents

Course content – lecture

Examples of industrial processes, formulating aimes and tasks for industrial process control systems and technical problems in their implementation. Types and ways of describing selected objects and technical processes, their specific properties as well as static and dynamic characteristics. Control structures: open and closed systems, systems with feedback from output values and from the process status, with a reference model, with a status estimator. Types of industrial control devices: continuous PID controllers, two-position and three-position controllers with correction, stepper, fuzzy and predictive controllers. Selection of control, measuring and executive devices. Designing industrial process control systems using PLC controllers.

Prerequisites and co-requisites

Knowledge of the subject Basics of Automation

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	100.0%	40.0%
Lecture	50.0%	60.0%

Recommended reading	Basic literature	1. Kaczorek T., Dzieliński A., Dąbrowski W., Łopatka R.: Podstawy teorii sterowania. PWN, Warszawa 2016. 2. Tatiewski P.: Sterowanie zaawansowane obiektów przemysłowych. Struktury i algorytmy. EXIT, Warszawa 2016. 3. Mikulczyński T., Samsonowicz Z., Więcławek R.: Automatyzacja procesów produkcyjnych. WNT, Warszawa 2015. 4. Kwiecień R.: Komputerowe systemy automatyki przemysłowej. Helion, Gliwice 2013. 5. Bubnicki Z.: Teoria i algorytmy sterowania, Wydawnictwo Naukowe PWN, Warszawa 2002. 6. Kasprzyk J.: Programowanie sterowników przemysłowych. PWN, Warszawa 2017. 7. Fudali M.: Przewodnik po technologiach przemysłu 4.0. Wyd.: Elamed Media Group, Katowice 2021. 8. Kacprzyk J.: Wieloetapowe sterowanie rozmyte, Wydawnictwo Naukowo - Techniczne, Warszawa 2001.
	Supplementary literature	1. Ogata K.: Modern Control Engineering. 4th edition. Prentice Hall, New Jersey 2002. 2. Goodwin GC., Graebe S.F., Salgado M.E.: Control Systems Design, Prentice Hall. 2001. 3. Czemplik A.: Modele dynamiki układów fizycznych dla inżynierów. WNT, Warszawa 2008. 4. Piegat A.: Modelowanie i sterowanie rozmyte. EXIT, Warszawa 1999. 5. Findeisen W.: Technika regulacji automatycznej. PWN, Warszawa 1976.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Types and ways of describing selected industrial processes. Types of industrial measuring, control and executive devices. Methods of selection of control devices	
Practical activites within the subject	Not applicable	

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