GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Basics of Industrial Measurements and Automatics, PG_00066042		
Field of study	Engineering and Technologies of Energy Carriers		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Optional subject group Subject group related to practical vocational preparation
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish no comments
Semester of study	1	ECTS credits	3.0
Learning profile	practical profile	Assessment form	assessment
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jacek Gębicki	
	Teachers	dr inż. Bartosz Szulczyński dr hab. inż. Jacek Gębicki	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	30.0	0.0	15.0	55

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=42492

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	55	5.0	15.0	75

Subject objectives

To acquaint students with the basic concepts of control, control and automatic regulation of chemical industry processes. Discussion of the principle of operation of measuring instruments for the control of basic process parameters in the chemical industry.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K02] is able to cooperate and work in a group, taking on different roles	The student understands the principles of cooperation with the economic and social environment	[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice
[K7_W03] recognizes phenomena occurring in industrial equipment and understands the basic processes and phenomena occurring in measuring devices and control systems, as well as their impact on technological processes,	The student is able to design methods of control and control of technological processes and is able to control the quality of production	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation
[K7_U09] is able to manage the work of a team, coordinate the execution of a design or research task	The student is able to independently perform a design and research task. He can work in a team and coordinate work in a team	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task

Subject contents

Feedback, regulation and control systems. Block diagrams, basic mathematical description of the dynamic properties of control elements. Steady and transient states of processes. Selection of regulators. Criteria for assessing the quality of regulation. Types of regulation. Measurements of basic process parameters such as: temperature, pressure, flow rate, liquid level in the tank, density, viscosity.

Prerequisites and co-requisites

Basic concepts of hydrostatics and hydrodynamics, heat movement, basic concepts of differential calculus

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture	60.0%	50.0%
	laboratory	60.0%	25.0%
	seminar	60.0%	25.0%
Recommended reading	Basic literature	1. R. Kaula, Podstawy Automatyki, Wydawnictwo Politechniki Śląskiej, Gliwice 2005. 2. J. Piotrowski i in., Pomiary, czujniki i metody pomiarowe wybranych wielkości fizycznych i składu chemicznego, Warszawa, WNT 2012	
	Supplementary literature	There are no requirements	
	eResources addresses		
Example issues/ example questions/ tasks being completed	The pressure of the fluid in the constriction of the nozzle in relation to the pressure of the fluid before constriction is: a) higher b) the same c) lower d) it is difficult to determine In August's psychrometer, the following applies: a) dry, wet and fan thermometer b) dry, wet thermometer c) thermometer d) 2 wet thermometers What adjustable parameters are the P controller: a) reinforcement, integration time b) reinforcement, c) reinforcement, time of advance d) reinforcement, sometimes doubling If the excitation is abrupt and the control element is characterized by integral transmittance then the element response will be: a) step b) linear c) none of them d) exponential		
Work placement	Not applicable		

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