

## GDAŃSK UNIVERSITY

## Subject card

Subject name and code	Basics of Industrial Measurements and Automatics, PG_00035154								
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			
Semester of study	1		ECTS credits			4.0			
Learning profile	practical profile		Assessment form			assessment			
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry								
Name and surname	Subject supervisor dr hab. inż. Jacek Gębicki								
of lecturer (lecturers)	Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	15.0	0.0	30.0	0.0	.0 15.0		60	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity Participation ir classes include plan		n didactic ed in study	Participation in consultation hours		Self-study		SUM	
	Number of study 60 hours			4.0		36.0		100	
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_W03		The student is able to design methods of control and control of technological processes and is able to control the quality of production			[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects			
	K7_K02		The student understands the principles of cooperation with the economic and social environment			[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills			
	K7_U09		The student is able to independently perform a design and research task. He can work in a team and coordinate work in a team			[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment			
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			
	seminar		60.0%			30.0%			
	laboratory		60.0%		20.0%				
	lecture		60.0%			50.0%			

Recommended reading	Basic literature	<ol> <li>R. Kaula, Podstawy Automatyki, Wydawnictwo Politechniki Śląskiej, Gliwice 2005.</li> <li>J. Piotrowski i in., Pomiary, czujniki i metody pomiarowe wybranych wielkości fizycznych i składu chemicznego, Warszawa, WNT 2012</li> </ol>				
	Supplementary literature	There are no requirements				
	eResources addresses	Adresy na platformie eNauczanie:				
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:					
	<ul> <li>a) higher b) the same c) lower d) it is difficult to determine</li> <li>In August's psychrometer, the following applies:</li> <li>a) dry, wet and fan thermometer b) dry, wet thermometer c) thermometer d) 2 wet thermometers</li> </ul>					
	What adjustable parameters are the P controller:					
	a) reinforcement, integration time b) reinforcement, c) reinforcement, time of advance d) reinforcement, sometimes doubling					
	the excitation is abrupt and the control element is characterized by integral transmittance then the element sponse will be:					
	a) step b) linear c) none of them d) exponential					
Work placement	Not applicable					

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