GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Automatics and Measurements of Physico-Chemical Values , PG_00025250		
Field of study	Chemistry in Construction Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
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 Physical Chemistry -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Adam Kloskowski	
	Teachers	dr hab. inż. Adam Kloskowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	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	4.0	16.0	50

Subject objectives

To familiarize students with the theoretical model description of industrial processes.
Showing the students the opportunity to use the theoretical model of the processes in the description of industrial processes.
Shaping students' computing habits in terms of industrial processes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
	assess the social and environmental problems resulting from technological processes in industry and nature	[SU2] Assessment of ability to analyse information [SW1] Assessment of factual knowledge [SK2] Assessment of progress of work
K6_K02	Student identifies elements of the control systems, understands methods of their operation and interaction, also he knows the methods of measurements of physico-chemical properties.	[SK5] Assessment of ability to solve problems that arise in practice
	1.perform basic calculations necessary for proper selection of the parameters in industrial processes 2. make simple measurements on basic physical and chemical parameters	[SW1] Assessment of factual knowledge
	The student knows the rules of operation and conduct of non-electrical properties measurements using electric meters	[SU1] Assessment of task fulfilment
K6_U08		

<table>
<tr><td>Subject contents</td><td>Basic parameters and their dimensions. Feed-back, systems of regulation and process control. Block diagrams. Mathematical description of dynamic properties of the control system elements. Steady and unsteady states of processes. Setting, control and regulation of processes - regulators and executive facilities. Methods of testing and analysis of unsteady states processes. Selection of regulators. Stability and quality of steering. Criteria for assessing the quality of regulation. Types of regulation. Measurements of basic parameters of processes. Measurement and regulation of temperature, temperature sensors, construction, operation principle. Dynamics of the temperature sensors. Pressure measurement, construction and principles operation of manometers. Measuring of the quantity and volume of fluid flow, liquid level, density, viscosity, humidity.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Physical parameters and their units. Basic differential calculus.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>tests during lectures</td><td>50.0%</td><td>60.0%</td></tr>
<tr><td>performance of of exercises and preparation of reports</td><td>100.0%</td><td>40.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. W. Greblicki: Podstawy automatyki, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2006, 2. Automatyka i robotyka – podstawy, Wydawnictwo PG, Gdańsk 2003, 3. D. Taler, J. Sokołowski: Pomiary cieplne w przemyśle, Agenda Wydawnicza PAK, Warszawa 2006 4. M.W. Kułakow: Pomiary technologiczne i aparatura kontrolno – pomiarowa w przemyśle chemicznym, WNT, Warszawa 1972, 5. E. Romer: Miernictwo przemysłowe, WNT, Warszawa</td></tr>
<tr><td>Supplementary literature</td><td>No requirements</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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