GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Industrial Sensors and Converters, PG_00054543		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Metrology and Information Systems -> Faculty of Electrical and Control Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Ziółko	
	Teachers	dr inż. Michał Ziółko	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	20.0	0.0	0.0	30

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11889

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	2.0	43.0	75

Subject objectives

Methods and tools used in the measurement of non-electrical quantities.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W11	He can use electrical devices.	[SW1] Assessment of factual knowledge
K6_W10	He can use electrical devices.	[SW1] Assessment of factual knowledge
K6_K05	He can use electrical devices.	[SK5] Assessment of ability to solve problems that arise in practice
K6_W09	The student knows the basics of processing, use and rational use of electricity.	[SW1] Assessment of factual knowledge
K6_U09	He can use electrical devices.	[SU2] Assessment of ability to analyse information
K6_U10	Has a basis in preparation for work in an industrial environment.	[SU3] Assessment of ability to use knowledge gained from the subject
K6_U05	Has a basis in preparation for work in an industrial environment.	[SU2] Assessment of ability to analyse information
K6_K01	Has a basis in preparation for work in an industrial environment.	[SK5] Assessment of ability to solve problems that arise in practice

<table>
<tr><td>Subject contents</td><td>LECTURE

Classification of industrial sensors. Static and dynamic properties of measurement sensors. Gain, conditioning and transmission of the output signal from the sensors. Sensors selection rules taking into account the external conditions and typical constrains of industrial conditions. Construction, working principle and basic usage properties of sensors: temperature, linear and angular displacement, movement parameters, forces and stresses, pressure, etc.

LABORATORY

Policy development and documentation of measurement results. Study of linear displacement sensors and proximity sensors. Study of properties of absolute and incremental encoders. Study inclinometer. Investigation of optical and laser sensors. Study of properties of temperature sensors.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>Written test (lecture)</td><td>50.0%</td><td>60.0%</td></tr>
<tr><td>Written test at the beginning of laboratory excercise</td><td>60.0%</td><td>40.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Recommended reading:

1. Zakrzewski J.: Converters and measurement sensors. Silesian University of Technology, Gliwice 2004

2 Nawrocki W.: Sensors and measurement systems. Poznan University of Technology, 2006.</td></tr>
<tr><td>Supplementary literature</td><td>Thematic internet materials and sample catalog cards of selected converters.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
CZUJNIKI I PRZETWORNIKI PRZEMYSŁOWE [ET][I][Niestacjonarne] [2023/24] - Moodle ID: 36113
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36113</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Transmission methods of measurement signals.

Construction of position and displacement sensors.

Temperature sensors.

Strain gauges.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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