GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Digital Metrology I, PG_00039805		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Artur Zieliński	
	Teachers	dr hab. inż. Artur Zieliński	

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	1.0	19.0	50

Subject objectives

Knowledge of terminology related to metrology. The ability to measure the physical size, correct in terms of quality and quantity.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U02	The student gets acquainted with the operation of the analog-to-digital converter.	[SU4] Assessment of ability to use methods and tools
K6_W04	The student independently creates software that manages the work of the potentiostat.	[SW3] Assessment of knowledge contained in written work and projects
K6_W06	The student gets to know the selected environment of engineering calculations.	[SW1] Assessment of factual knowledge
K6_U01	The student is able to construct a dedicated measuring station.	[SU2] Assessment of ability to analyse information
K6_K01	The student knows the offer and the possibilities of devices and software used in signal analysis.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents

Digital signal definition. Differences between analog anfd digital measurement. Examples of digital techniques in everyday life and scientific investigations. Sampling anfd quantization of signals. Fourier transformation, frequency spectrum.

Prerequisites and co-requisites

General mathematics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	60.0%	50.0%
lab	100.0%	50.0%

Recommended reading

Basic literature	R. G. Lyons, Wprowadzenie do cyfrowego przetwarzania sygnałów, WKiŁ, Warszawa, 2003
Supplementary literature	T. P. Zieliński, Cyfrowe przetwarzanie sygnałów: od teorii do zastosowań, WKiŁ, Wyd. 2 popr, Warszawa, 2007
eResources addresses	Adresy na platformie eNauczanie: Miernictwo cyfrowe 2020/2021 - Nowy - Moodle ID: 20333 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=20333

Example issues/ example questions/ tasks being completed	Analysis of the signals used in impedance spectroscopy. Measurement of electrode potential by means of a digital system. Selection of the operating parameters of the measuring system according to the experimental requirements.
Work placement	Not applicable