



Subject card

Subject name and code	Digital measurement, PG_00063528						
Field of study	Materials Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject				2025/2026	
Education level	second-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				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Corrosion and Electrochemistry -> 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	0.0	0.0	0.0	15
	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	15	2.0		8.0		25
Subject objectives	Presentation of algorithms for analysis of digital images. Implementation of above mentioned techniques in LabVIEW.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U04] Can undertake a detailed analysis of the obtained results and develop a technical report or presentation, also in English.	The student understands the results provided by the calculation software.			[SU2] Assessment of ability to analyse information		
	[K7_W07] Has knowledge of the development trends and most important new achievements of the fields of science and scientific disciplines relevant to materials engineering and related disciplines.	The student is able to search and use alternative sources of knowledge (for example, the Internet).			[SW1] Assessment of factual knowledge		
	[K7_W04] Has enhanced knowledge of materials sciences, within the scope required for describing and understanding the correlation between the chemical composition, structure and mechanical and physical properties.	The student is able to perform a comprehensive image analysis using several techniques.			[SW1] Assessment of factual knowledge		
	[K7_U07] Can plan and organize individual and team work.	The student is able to use tools for surface analysis of materials.			[SU1] Assessment of task fulfilment		
Subject contents	Signal analysis in 2-dimensional domain (images). The use of LabVIEW to process the data.						
Prerequisites and co-requisites	Digital metrology I.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Laboratory		100.0%		50.0%		
	Lecture exam		60.0%		50.0%		
Recommended reading	Basic literature		Cyfrowe przetwarzanie sygnałów. Od teorii do zastosowań, Tomasz P. Zieliński, WKŁ, Warszawa, 2005				

	Supplementary literature	Podstawy cyfrowego przetwarzania obrazów, Witold Malina, Sergey Ablameyko, Waldemar Pawlak, ISBN: 83-87674-44-3, Akademicka Oficyna Wydawnicza EXIT, Wydanie 1, Warszawa 2002.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. What is the relationship between filtration and image spectrum? 2. What shows and how you can use the histogram? 3. Please describe the selected industrial applications of digital image processing. 	
Work placement	Not applicable	

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