



## Subject card

Subject name and code	, PG_00058693						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
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	1	Language of instruction			Polish		
Semester of study	2	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		5.0		15.0	50
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_W07		The student is able to search and use alternative sources of knowledge (for example, the Internet).		[SW1] Assessment of factual knowledge		
	K7_U07		The student is able to use tools for surface analysis of materials.		[SU1] Assessment of task fulfilment		
	K7_U04		The student understands the results provided by the calculation software.		[SU2] Assessment of ability to analyse information		
K7_W04		The student is able to perform a comprehensive image analysis using several techniques.		[SW1] Assessment of factual knowledge			
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		
	Lecture exam		60.0%		50.0%		
	Laboratory		100.0%		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						
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. What is the relationship between filtration and image spectrum?</li> <li>2. What shows and how you can use the histogram?</li> <li>3. Please describe the selected industrial applications of digital image processing.</li> </ol>						

Work placement	Not applicable
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