



Subject card

Subject name and code	Advances in materials engineering instrumentation: new trends and applications, PG_00042271						
Field of study	Nanotechnology						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2023/2024		
Education level	second-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		English		
Semester of study	1		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Aleksandra Mielewczyk-Gryń				
	Teachers		dr hab. inż. Aleksandra Mielewczyk-Gryń				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	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		2.0		18.0	50
Subject objectives	The aim of the course is to present the current advancement in multiple experimental techniques used in state-of-the-art measurement techniques.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_W03		The student recognizes the relevant trends in materials science		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	K7_W02		The student has proper knowledge of current state-of-the-art materials engineering methods		[SW1] Assessment of factual knowledge		
	K7_U01		The student is capable of analyzing the information coming from different sources.		[SU2] Assessment of ability to analyse information		

Subject contents	§Introduction		
	§Thermal analysis		
	§Microscopy		
	§Resonance methods		
	§Spectroscopy §Ion scattering methods		
	§Optical properties measurements		
	§Low temperature methods		
	§Electrical properties measurements		
	§Diffraction methods§Introduction		
	§Thermal analysis		
	§Microscopy		
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	§Optical properties measurements		
	§Low temperature methods		
	§Electrical properties measurements		
	§Diffraction methods		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	paper review - oral	50.0%	25.0%
	paper review - writting	50.0%	25.0%
	final test	50.0%	50.0%
Recommended reading	Basic literature	William D. Callister, Jr. Materials Science and Engineering 2007 John Wiley & Sons, Inc.	
	Supplementary literature	<ul style="list-style-type: none">Charles T. Lynch Practical Handbook of Materials Science ISBN 9781439832097Goldstein, J., Scanning Electron Microscopy and X-ray Microanalysis ISBN 978-1-4615-0215-9	
	eResources addresses	Adresy na platformie eNauczanie: Advances in materials engineering instrumentation: new trends and applications - Moodle ID: 33951 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33951	
Example issues/ example questions/ tasks being completed			

Work placement	Not applicable
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