



Subject card

Subject name and code	, PG_00058872						
Field of study	Nanotechnology						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study 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		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Bogusław Kusz				
	Teachers		prof. dr hab. inż. Bogusław Kusz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	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	Acquisition of the ability to describe the problem, plan an experiment leading to a solution to the problem, evaluate the results of the experiment.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U04		The student is able to plan and carry out experiments, critically analyze their results.		[SU2] Assessment of ability to analyse information		
	K6_K04		The student knows how to work in a team.		[SK1] Assessment of group work skills		
	K6_U10		On the example of nanotechnology, the student is able to critically assess the risks associated with new technologies		[SU2] Assessment of ability to analyse information		
	K6_W10		The student has knowledge in the field of planning and conducting a physical experiment.		[SW1] Assessment of factual knowledge		

Subject contents	1. Ability to plan a simple experience. 2. The ability to calculate the standard deviation of the average value of the results of many measurements. 3. The ability to calculate the uncertainty of a complex quantity. 4. The ability to create a chart (graph of the function) on the basis of tabular data and to determine from the chart the basic parameter of the process described by the chart. Description with as much information as possible. 5. What is a scientific problem and a non-scientific problem (according to own knowledge and according to K. Popper). 6. Description of the test object (general scheme): input/output and control variables, noise. 7. Experimental plan - types of plans: total, selective, optimized, randomized,		
Prerequisites and co-requisites	none		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	calculation exercises -written test	50.0%	48.0%
	lecture - written test	50.0%	52.0%
Recommended reading	Basic literature	Internet	
	Supplementary literature	none	
	eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30263 - e-course Introduction to Exp. Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. What is a randomized plan?2. Calculate the standard deviation of the composite quantity.3. Plan an experiment to prove the following thesis:4. Draw a graph based on tabular data. Describe the chart as fully as possible.		
Work placement	Not applicable		

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