



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	Instytut Nanotechnologii i Inżynierii Materiałowej -> 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	<p>1. Ability to plan a simple experience.</p> <p>2. The ability to calculate the standard deviation of the average value of the results of many measurements.</p> <p>3. The ability to calculate the uncertainty of a complex quantity.</p> <p>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.</p> <p>5. What is a scientific problem and a non-scientific problem (according to own knowledge and according to K. Popper).</p> <p>6. Description of the test object (general scheme): input/output and control variables, noise.</p> <p>7. Experimental plan - types of plans: total, selective, optimized, randomized,</p>											
Prerequisites and co-requisites	none											
Assessment methods and criteria	<table border="1" data-bbox="448 770 1485 875"> <thead> <tr> <th data-bbox="448 770 794 808">Subject passing criteria</th> <th data-bbox="794 770 1141 808">Passing threshold</th> <th data-bbox="1141 770 1485 808">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 808 794 842">calculation exercises -written test</td> <td data-bbox="794 808 1141 842">50.0%</td> <td data-bbox="1141 808 1485 842">48.0%</td> </tr> <tr> <td data-bbox="448 842 794 875">lecture - written test</td> <td data-bbox="794 842 1141 875">50.0%</td> <td data-bbox="1141 842 1485 875">52.0%</td> </tr> </tbody> </table>			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%
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Recommended reading	<table border="1" data-bbox="448 882 1485 1077"> <tbody> <tr> <td data-bbox="448 882 794 916">Basic literature</td> <td colspan="2" data-bbox="794 882 1485 916">Internet</td> </tr> <tr> <td data-bbox="448 916 794 949">Supplementary literature</td> <td colspan="2" data-bbox="794 916 1485 949">none</td> </tr> <tr> <td data-bbox="448 949 794 1077">eResources addresses</td> <td colspan="2" data-bbox="794 949 1485 1077"> Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30263 - e-course Introduction to Exp. Adresy na platformie eNauczanie: </td> </tr> </tbody> </table>			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:	
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Example issues/ example questions/ tasks being completed	<p>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.</p>											
Work placement	Not applicable											