

## SDAŃSK UNIVERSITY 的 OF TECHNOLOGY

## Subject card

Subject name and code	, PG_00058872							
Field of study	Nanotechnology							
Date of commencement of studies	October 2023		Academic year of realisation of subject			2023/2024		
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 Nanotechnolo	/ateriałowej ->	Faculty of App	olied Ph	vsics and Mathematics			
Name and surname	Subject supervisor	dr hab. inż. Beata Bochentyn						
of lecturer (lecturers)	Teachers		dr hab. inż. Beata Bochentyn					
			dr hab. inż. Aleksandra Mielewczyk			-Gryń		
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	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 classes include plan		I didactic     Participation in consultation hours		Self-study S		SUM	
	Number of study 30 hours		2.0		18.0		50	
Subject objectives	Acquiring the ability to describe the problem, plan and conduct an experiment leading to solving the problem, analyze, present and discuss the experimental results.							
Learning outcomes	Course outcome		Subject outcome Method of verification					
	K6_U04		The student is able to plan an experiment, select appropriate measuring instruments, conduct an experiment, critically analyze the obtained results, assess measurement uncertainty and conduct a discussion.			[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	Sources of scientific and non-scientific knowledge. The ability to plan a simple experiment. Ability to calculate the standard deviation of the average value of the results of many measurements. Ability to calculate the uncertainty of a complex quantity. Ability to create a chart (by hand and using computer software) based on tabular data and determine from the chart the basic parameter of the process described by the chart. Description with as much information as possible. Ability to select an appropriate measuring instrument for the planned measurement and to assess the uncertainty of the measurement made using this instrument. Rules for preparing reports from laboratory classes. Rules for preparing a scientific publication.							
Prerequisites and co-requisites	none							
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade		
	classes - scientific project		50.0%			50.0%		
	lecture - written exam		50.0%			50.0%		

Recommended reading	Basic literature	<ul> <li>B. Kusz, Metody wykonywania pomiarów oraz szacowanie niepewności pomiaru (<u>https://pg.edu.pl/files/ftims/2021-03/wstep.pdf</u>)</li> <li>K. Kozłowski, R. Zieliński I Laboratorium z Fizyki część I Wydawnictwo PG, 2003</li> <li>Zubek M, Experiments in physics. First laboratory for students, GUT Publishing House, 2009</li> <li>Dudkiewicz J, Kusz B, Laboratorium z Fizyki, część 2, Wydawnictwo Politechniki Gdańskiej, 2002</li> <li>Wstęp do analizy błędu pomiarowego, Wydawnictwo PWN</li> <li>Guide to the Expression of Uncertainty in Measurement, ISO, Switzerland 1995. Tłumaczenie: Wyrażanie niepewności pomiaru: Przewodnik, Główny Urząd Miar, Warszawa 1999.</li> </ul>		
	Supplementary literature	none		
eResources addresses		Adresy na platformie eNauczanie: Wprowadzenie do eksperymentu - Moodle ID: 38044 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38044		
Example issues/ example questions/ tasks being completed				
Work placement	Not applicable			