GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introduction to experiment, PG_00027570		
Field of study	Nanotechnology		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021
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	Department of Solid State Physics -> 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	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Adresy na platformie eNauczanie:

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	1.0	19.0	50

Subject objectives

The goal of the lectures is to acquaint the students with basics of physical measurements methodology.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_K04	The student will have the ability to work in a team.	[SK1] Assessment of group work skills
K6_U04	The student will have the ability to conduct research and analyze the results.	[SU1] Assessment of task fulfilment
K6_U10	The student will learn about the positive and negative effects of nanotechnology on the environment.	[SU3] Assessment of ability to use knowledge gained from the subject
K6_W10	The student will have knowledge about planning the experiment.	[SW1] Assessment of factual knowledge

Subject contents

During the course of classes the students get to know the notion of uncertainty: its nature, possible sources and types. At the same time they learn, how to properly write down measurements with uncertainty taken into account. Next they learn to calculate uncertainty of composite quantities using the complete differential method. Through the rest of semester the students learn the basics of statistical analysis: estimation of mean, standard deviation and standard deviation of the mean of a given random sample; the three sigma rule and Q Dixon test for rejection of outliers; T-Student test for comparison of means of two random samples and fitting a linear function to a data sample using the least squares fit.

Prerequisites and co-requisites

Basic course of physics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam	51.0%	100.0%

Recommended reading

Basic literature	1.Polański Z.,Planowanie doświadczeń w technice, PWN, Warszawa, 1984.
Supplementary literature	Internet
eResources addresses	

Example issues/ example questions/ tasks being completed	1.Let A denote a set obtained by taking 6 random samples out of a larger set: A={5,4,3,5,4,6}, and let B denote a second set obtained similarly: B={4,4,6,5,4,5} On the base of T-Student test check if the populations from which the two samples were taken are equal. 2.The speed of railway carriage is (5,0 +/-0,2)m/s .Its mas: m=(10+/-1) tons . To calculate kinetic energy of carriage. Perform uncertainty analysis of composite quantities E and present the final results according to established norms.
Work placement	Not applicable