GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Laboratory of the basics of modern physics, PG_00049440						
Field of study	Technical Physics						
Date of commencement of studies	October 2020		Academic year of realisation of subject	2022/2023			
Education level	first-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	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	2.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Ireneusz Linert					
	Teachers	dr inż. Ireneusz Linert					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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	To familiarize students with typical issues in the field of modern physics (solid state physics, atomic and nuclear physics), basic experimental techniques and methods of results analysis.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W12	The student is introduced to Health and safety rules and complies with them.	[SW3] Assessment of knowledge contained in written work and projects
K6_W02	The student applies the knowledge of solid state, atomic and nuclear physics, uses different methods of analysis of the measured results and error estimation	[SW1] Assessment of factual knowledge
K6_U04	Student: - operates measuring instruments: power supplies, frequency meters, counters, universal meters, - uses computer programs for processing measurement data, - uses various methods developing the results of measurement and error analysis, - confronts the measurement results with theoretical predictions and / or literature data.	[SU1] Assessment of task fulfilment
K6_W08	Student: - operates measuring instruments: power supplies, frequency meters, counters, universal meters, - uses computer programs for processing measurement data, - uses various methods developing the results of measurement and error analysis, - confronts the measurement results with theoretical predictions and / or literature data.	[SW3] Assessment of knowledge contained in written work and projects
K6_W07	Student: - operates measuring instruments: power supplies, frequency meters, counters, universal meters, - uses computer programs for processing measurement data, - uses various methods developing the results of measurement and error analysis, - confronts the measurement results with theoretical predictions and / or literature data.	[SW1] Assessment of factual knowledge

Subject contents

Set of experiments: 1. Investigation of stochastic processes. 2. Determination of the half-life of radioactive isotope 3. Study of the absorption of beta radiation in materials. 4.Study of the absorption of gamma radiation in materials 5. Measurement of optical spectra of gases 6. Measurement of the range of alpha particles in air and checking the inverse square law of the distance 7. Investigation of the temperature dependence of semiconductors.

Prerequisites and co-requisites

1. Basic knowledge of solid state, atomic and nuclear physics. 2. Ability to use differential and integral calculus. 3. Ability to use basic measuring devices (multimeter, caliper, micrometer screw)

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
preparation for exercises	50.0%	60.0%
execution of the report	90.0%	40.0%

Recommended reading

Basic literature	1. D. Haliday, R. Resnick, J.Walker ,,Podstawy fizyki"", t. 5, Wydawnictwo Naukowe PWN, Warszawa 2005. 3. J. Massalski, M. Massalska ,,Fizyka dla inzynierów"" cz. II
Supplementary literature	T. Mayer-Kukuck, Fizyka jądrowa, PWN 1987
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Radioactive decay, the law of radiation absorption, the law of radioactive decay, counter scintillation,

Work placement

Not applicable