GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics in the experiment, PG_00061890		
Field of study	Materials Engineering		
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	1	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Zakład nowych materiałów funkcjonalnych do konwersji energii -> Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Beata Bochentyn	
	Teachers	dr hab. inż. Beata Bochentyn dr hab. inż. Natalia Wójcik	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	30.0	0.0	0.0	0.0	45
	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	45	5.0	50.0	100

Subject objectives	Familiarization with the basic laws of classical physics. Acquisition of the ability to analyze physical phenomenaand solving technical issues based on the laws of physics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] can learn independently	The student is able to independently acquire and systematize knowledge in the field of physics from Polish- or English-language academic textbooks and other sources of scientific knowledge. The student is able to assess the reliability of the analyzed sources.	[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject
[K6_U01] Can properly use selected analytical, simulation and experimental methods, as well as devices for measuring the fundamental properties of materials and technological processes.	The student acquires the ability to analyze experimental data. He can analyze physical phenomena by making the necessary drawings. He obtains the final results by deriving them from the laws of physics. Applies unit conversions and performs numerical calculations.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[K6_W02] has knowledge of physics and chemistry, useful for formulating and solving simple problems within the scope of materials science	The student knows the basic issues of classical mechanics, kinematics and dynamics of translational and rotational motion. He can describe oscillating and wave motion, he knows the basic concepts of thermodynamics, electricity and magnetism	[SW1] Assessment of factual knowledge
[K6_U06] Can integrate obtained information, interpret it and draw conclusions, as well as formulate and justify opinions.	The student prepares to solve physics problems using the recommended textbooks. Recalls basic physical laws and understands them.	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Physics in an experiment introduces students to issues concerning various branches of physics, which will be explained on the basis of experimental demonstrations. The topics of the classes are: uniform and uniformly variable rectilinear motion, projections: vertical, horizontal and diagonal, Newtonian dynamics of the translational motion of a material point, principles of conservation of energy and momentum in translational motion, rotational motion of a material point and a rigid body, simple and damped oscillation, waves mechanical, optics, thermodynamics, electrostatics, magnetic field.

Prerequisites and co-requisites

non

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
passing test	50.0%	100.0%

Recommended reading

Basic literature

[1] K. Jezierski, K. Sierański, I.Szlufarska, *Fizyka -- Repetytorium, zadania z rozwiązaniami, kurs powtórkowy dla studentów I roku i uczniów szkół średnich*, Oficyna Wydawnicza Scripta, Wrocław 2005

[2] M.Herman, A.Kalestyński, L.Widomski, *Podstawy Fizyki dla kandydatów na wyższe uczelnie i studentów*, WN PWN, Warszawa 2004

[3] J.Jędrzejewski, W.Kruczek, A.Kujawski, *Zbór zadań z fizyki dla uczniów szkół średnich i kandydatów na studia*, WNT, Warszawa, 2000

[4] D.Halliday, R.Resnick, J.Walker, *Podstawy Fizyki*, PWN, Warszawa

	Supplementary literature	[1] D.Halliday, R.Resnick, J.Walker, *Podstawy Fizyki*, *Zbiór zadań*, PWN, Warszawa [2] Zbiór zadań z fizyki, skrypt Politechniki Gdańskiej, *http://www.mif.pg.gda.pl/zz/* [3] W.Moebs, S.J.Ling, J.Sanny, *Fizyka dla szkół wyższych*, Tom 1, OpenStax Polska *https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-1*
	eResources addresses	Adresy na platformie eNauczanie: Fizyka w eksperymencie IM 2023 - Moodle ID: 34097 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34097
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	