GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics in the experiment, PG_00063139		
Field of study	Materials Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
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	Division Of New Functional Materials For Energy Conversion -> Institute Of Nanotechnology And Materials Engineering -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Beata Bochentyn	
	Teachers	dr hab. inż. Beata Bochentyn mgr inż. Piotr Okoczuk	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	0.0	0.0	0.0	60

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	60	5.0	35.0	100

Subject objectives

Familiarization with the basic laws of classical physics, with particular emphasis on broadly understood mechanics and analysis of thermal phenomena. Acquisition of skills in analyzing physical phenomena and solving technical problems based on the laws of physics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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.	[SW1] Assessment of factual knowledge
[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_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 Experiment introduces students to issues related to various branches of physics, which will be explained based on experimental demonstrations. Topics of the classes are: rectilinear uniform and uniformly changing motion, projections: vertical, horizontal and oblique, Newton's dynamics of the translational motion of a material point, the principles of conservation of energy and momentum in translational motion, rotational motion of a material point and a rigid body, simple, damped and forced oscillatory motion, mechanical waves, thermodynamics and thermal phenomena.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2">non</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>writing exam</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>passing the exercises</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>[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</td></tr>
<tr><td>Supplementary literature</td><td>[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</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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