GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics, PG_00064174		
Field of study	Transport		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Obligatory subject group 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	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Anna Rybicka	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	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 didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	15.0	55.0	100

Subject objectives

Knowledge of basic principles of thermodynamisc, hydromechanisc and moderm physics.

Ability of analyzing physical phenomena, solving of technical problems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U06] able to plan and conduct simple laboratory and operational experiments and simulations in the area of transport; able to interpret the results and formulate conclusions	Student can analize experimental results and formulate conclusions.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
[K6_W02] has knowledge of physics, mechanics, electrical engineering, hydromechanics, thermodynamics, materials science, and measurement techniques necessary to understand the phenomena occurring in transportation, as well as the principles of construction and operation of infrastructure and means of transport	Student knows basic problems of thermodynamics, hydromechanics and modern physics; understands physical laws and analyzes technical problems.	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Ideal gas. Fundamental laws of macroscopic thermodynamics.

Fundamental laws of hydromechanisc: Pascal law, Archimedes law, Bernoulli equation.

Elements od special relativity theory,

Corpuscular and wave character id electromagnetic radiation.

Atom models.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Continuation of the physics course, given during the first semester - knowledge od basic laws of classical physics is necessary.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Exercises - two practical tests</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>https://openstax.org/details/books/university-physics

Halliday, Resnick, Walker, Fundamentals of Physics</td></tr><tr><td>Supplementary literature</td><td>Tipler Llellewyn, Modern Physics, 6ed, Freeman 2012</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>First and second thermodynamics laws in ideal gas

Application of the Bernoulli equation.

Lorentz transformations: lenght contraction, time dylatation, relativistic velocity addition.

Photoelectric effect.

Postulates of Bohr model of atom</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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