



Subject card

Subject name and code	Physics, PG_00064174						
Field of study	Transport						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
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						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Anna Rybicka					
	Teachers	dr inż. Anna Rybicka					
Lesson types and methods of instruction	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 thermodynamic, hydromechanic and modern 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 analyze 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			

Subject contents	<p>Ideal gas. Fundamental laws of macroscopic thermodynamics.</p> <p>Fundamental laws of hydromechanics: Pascal law, Archimedes law, Bernoulli equation.</p> <p>Elements of special relativity theory,</p> <p>Corpuscular and wave character of electromagnetic radiation.</p> <p>Atom models.</p>		
Prerequisites and co-requisites	Continuation of the physics course, given during the first semester - knowledge of basic laws of classical physics is necessary.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exercises - two practical tests	50.0%	100.0%
Recommended reading	Basic literature	<p>https://openstax.org/details/books/university-physics</p> <p>Halliday, Resnick, Walker, Fundamentals of Physics</p>	
	Supplementary literature	Tipler Llewellyn, Modern Physics, 6ed, Freeman 2012	
	eResources addresses	<p>Adresy na platformie eNauzanie:</p> <p>FIZYKA II - TRANSPORT_24/25 - Moodle ID: 38872</p> <p>https://enauzanie.pg.edu.pl/moodle/course/view.php?id=38872</p>	
Example issues/ example questions/ tasks being completed	<p>First and second thermodynamics laws in ideal gas</p> <p>Application of the Bernoulli equation.</p> <p>Lorentz transformations: length contraction, time dilatation, relativistic velocity addition.</p> <p>Photoelectric effect.</p> <p>Postulates of Bohr model of atom</p>		
Work placement	Not applicable		

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