



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 thermodynamisc, hydromechanisc 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	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.		
Prerequisites and co-requisites	Continuation of the physics course, given during the first semester - knowledge od 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	https://openstax.org/details/books/university-physics Halliday, Resnick, Walker, Fundamentals of Physics	
	Supplementary literature	Tipler Lllellwyn, Modern Physics, 6ed, Freeman 2012	
	eResources addresses	Adresy na platformie eNauczanie: FIZYKA II - TRANSPORT_24/25 - Moodle ID: 38872 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38872	
Example issues/ example questions/ tasks being completed	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		
Work placement	Not applicable		

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