



Subject card

Subject name and code	Physics, PG_00044538						
Field of study	Transport						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
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		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Solid State Physics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Anna Rybicka				
	Teachers		dr inż. Anna Rybicka				
			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	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		5.0		40.0	75
Subject objectives	Knowledge of basic principles of thermodynamics and modern physics.						
	Ability of analyzing physical phenomena, solving of technical problems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W02] has basic knowledge of physics which includes technical mechanics, fluid mechanics, solid state physics, optics and acoustics required for understanding basic phenomena of physics which occur in transport		Students know basic pblems of thermodynamisc, understand physical laws and analize technical problems.		[SW1] Assessment of factual knowledge		
	[K6_W03] has basic knowledge of hydromechanics, thermodynamics, machine design, materials science and electrical engineering required for understanding the principles of construction and operation of means of transport		Students identfy basic physical phenomena, formulate and apply them.		[SW1] Assessment of factual knowledge		
	[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		Students can analize experimental results and formulate conclusions.		[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		

Subject contents	Fundamental laws of macroscopic thermodynamics.		
	Elements of special relativity theory.		
	Black body radiation.		
	Corpuscular and wave character of electromagnetic radiation.		
	Atom models.		
	Schroedinger equation.		
	Elements of solid state physics.		
	Radioactivity.		
Prerequisites and co-requisites	Continuation of the physics course, given during the first semester (mechanics, electricity, magnetism)		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exercises -practical test	50.0%	60.0%
	Lecture - exam in theory	50.0%	40.0%
Recommended reading	Basic literature	Ohanian, Markert, Physics for Engineers and Scientists, NY Norton, 2007 www.ftims.pg.edu.pl/Studenci/Materialy_dydaktyczne (University Physics)	
	Supplementary literature	Tipler, Llewellyn, Modern Physics, 6ed, Freeman, 2012	
	eResources addresses	Adresy na platformie eNauczanie: FIZYKA II - TRANSPORT _22/23 - Moodle ID: 26430 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26430	
Example issues/ example questions/ tasks being completed	First and second thermodynamics laws.		
	Lorentz transformations.		
	Photoelectric effect.		
	Postulates of Bohr model of atom.		
	Broglie theory.		
	Radioactive disintegration law.		
Work placement	Not applicable		