



## Subject card

Subject name and code	Physics 2, PG_00041667						
Field of study	Transport and Logistics, Transport and Logistics						
Date of commencement of studies	October 2020	Academic year of realisation of subject				2020/2021	
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 Control and Power Engineering -> Faculty of Ocean Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Małgorzata Śmiątek-Telega				
	Teachers		dr hab. inż. Małgorzata Śmiątek-Telega mgr inż. Joanna Grochowalska dr inż. Klaudia Wrzask				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	20.0	0.0	0.0	30
	E-learning hours included: 0.0						
Fizyka 2 Transport i Logistyka sem. letni 2020/21 - Moodle ID: 12000 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12000">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12000</a>							
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		10.0		35.0	75
Subject objectives	Acquisition of basic knowledge from selected branches of classical and modern physics. Acquiring the ability of a qualitative understanding of selected principles and laws of classical and modern physics and quantitative analysis of selected phenomena in this area. Learning the basic techniques and measurement methods of selected physical quantities Developing social competences (ability to cooperate in a student group), aimed at effective problem solving and implementation of tasks, sense of responsibility, honesty and reliability in the academic environment and society.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U02] can work individually and in a team, communicate through various techniques in professional environment and also record, analyse, and present the results of work, can estimate the time needed to complete a given task		The student is able to work individually and in a team during physics laboratory classes, communicate using various techniques in a professional environment, as well as document, analyze and present the results of his work, can estimate the time needed to complete the task.		[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		
[K6_W02] has a basic knowledge in physics, including technical mechanics, fluid mechanics, solid-state physics, optics and acoustics necessary to understand basic physical phenomena occurring in transport		The student has a basic knowledge in the field of physics including technical mechanics, fluid mechanics, solid state physics, optics and acoustics necessary to understand the basic physical phenomena occurring in transport.		[SW1] Assessment of factual knowledge			
Subject contents	Experiment planning, Laboratory notes, Measurement uncertainties, Analysis of results Maxwell's rainbow Electromagnetic wave running Energy transport Pressure Polarization Reflection and refraction of the wave Total reflection Polarization through refraction Images Flat mirrors Spherical concave mirrors Spherical spherical faces Spherical surfaces Thin lenses Optical instruments Interference Light as Wave Law of refraction Diffraction Young Experiment Locating fringes Coherent light Interference on double slit						
Prerequisites and co-requisites	Fundamentals of differential calculus and geometry. Fundamentals of classical mechanics.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	50.0%	50.0%
	Laboratory	50.0%	50.0%
Recommended reading	Basic literature	David Halliday, Robert Resnick, Jearl Walker, Podstawy fizyki. T. 1-5, Wydawnictwo Naukowe PWN, 2012 J. Orear, Fizyka, tom 1 i 2, Warszawa 1998 A. Januszajtis, Fizyka dla Politechnik, tom 1-3, Warszawa 1991 J. Massalski, M. Massalska, Fizyka dla Inżynierów, tom 1 i 2, Warszawa 2013	
	Supplementary literature	Paul A. Tipler, Ralph A. Llewellyn, Fizyka współczesna, Wydawnictwo Naukowe PWN, Warszawa 2012; I.W. Sawieliew, Wykłady z fizyki, tom 1. i 2., Wydawnictwa Naukowe PWN, Warszawa, 2003	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. EM wave polarity (linear and unpolarized polarized wave, Malus' law) 2. Law of refraction (pattern with description and drawing) 3. Concave spherical concave mirrors (drawing, diagram of radii, which we get images depending on the placement of the object relative to the mirror) 4 Diffusing lens (drawing, diagram of rays, which we get images depending on the placement of the object in relation to the lens) 5. Constructive event (in which situation it takes place, drawing with description) 6. Young's experiment on two slits (drawing with description, when there are bright colors) when dark stripes, pattern)		
Work placement	Not applicable		