

关。GDAŃSK UNIVERSITY 创 OF TECHNOLOGY

Subject card

Subject name and code	Physics, PG_00055797									
Field of study	Transport and Logistics									
Date of commencement of studies	October 2021		Academic year of realisation of subject			2021/2022				
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	1		ECTS credits			6.0				
Learning profile	general academic profile		Assessment form			assessment				
Conducting unit	Faculty of Ocean Engineering and Ship Technology									
Name and surname	Subject supervisor	dr inż. Klaudia Wrzask								
of lecturer (lecturers)	Teachers		dr inż. Klaudia Wrzask							
	dr inż. Joanna Grochowalska									
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Project		Seminar	SUM		
of instruction	Number of study hours	30.0	15.0	15.0	0.0		0.0	60		
	E-learning hours included: 0.0									
	Adresy na platformie eNauczanie: Fizyka (PG_00055797) Transport i Logistyka sem .1 WĆL zimowy 2021/22 - Moodle ID: 16514 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16514									
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	idactic Participation in in study consultation hours		Self-study		SUM		
	Number of study hours	60		10.0		80.0		150		
Subject objectives	Acquisition of basic knowledge from selected branches of classical and modern physics. Gaining skills of qualitative understanding of selected principles and laws of classical and contemporary physics and quantitative analysis of selected phenomena in this field. Learning basic techniques and methods measurement of selected physical quantities									
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, 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			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject				
	[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		Has knowledge of the basics of physics in in the field of 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				

	law of dynamics. II law of dynamics, equations of motion, trajectory, 3rd law of dynamics, friction. Definiti of work for constant and changing forces, work and energy theorem, definition of power, conservative for the principle of conservation of energy; potential energy of gravity, principle conservation of mass, momentum of the body system, conservation of momentum, rocket motion, body collisions. The principle of conservation of angular momentum, rotational motion, moment of inertia, kinetic energy in rot motion. Moment of force, definition of angular momentum, relationship between the moment of force and angular momentum, angular momentum of a rigid body, conservation of angular momentum. Special The of Relativity: Galileo transformation, Michelson-Morfey experiment, Einstein's principle of relativity, simultaneity of events, time relativity, time dilation, twin paradox, length reduction, Lorentz transformation velocity transformation, relativistic momentum and energy. Simple harmonic motion, inbiandin, welocity, acceleration, force and energy in motion harmonic. Mathematical pendulum, physical pendulum, damped harmonic motion, vibrations forced, mechanical resonance. Mechanical waves: transverse and longitudin waves, wave reflection, harmonic wave, sound waves, wave intensity. Harmonic wave interference, wave amplification and blanking, standing wave, sting vibrations, Doppler effect. Electric field: electric charges definition of electric field strength, dipole field electricit, movement of a charge in an electric field, a divar, electric, caracity capacity definition, flat capacitance, capacitor with delectric field strength, electric capacity definition, flat capacitance, capacitor with ductor systeme potential, energy charge interactions, conductor potential, charge density on the conductor sufface, vanc Graaff generator. Electric capacity definition, flat capacitance, capacitor with a current in a magnetic field, a frame potential, neergy charge interactions, conductor potential, charge movement in a					
Prerequisites and co-requisites						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade			
	Laboratory	70.0%	40.0%			
	Lacture	70.0%	30.0%			
	Exercise	70.0%	30.0%			
Recommended reading	Basic literature	Fizyka dla Szkół Wyższych. Tom 1 i Tom 2, darmowe podreczniki OpenStax				
	Supplementary literature	David Halliday, Robert Resnick, Jearl Walker, Podstawy fizyki. T. 1-5, Wydawnictwo Naukowe PWN, 2012				
	eResources addresses	Podstawowe				
		https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82- wy%C5%BCszych-tom-1 -				

Example issues/ example questions/ tasks being completed	1. Give the second principle of dynamics and conclusions resulting from it			
	2. What are conservative and non-conservative forces; how much is the work they do; Provide examples of conservative and non-conservative forces			
	3. Give examples of systems moving in a harmonic way; What equation describes the harmonic motion straight?; Write and draw the dependence of the deflection from the position of the equilibrium from time; What happens if the frequency of the forcing force is close to the natural frequency of the system?			
	4. Draw and describe the serial connection of three capacitors with capacities C1, C2 and C3; Set dependence on equivalent capacity			
	5. Ohm law for the closed circuit: give the formula and explain it in the diagram with the current source and the receiver			
	6. Give and explain the formula for Lorentz strength. How he changes a return of strength depending on the signs of the load (draw)?			
Work placement	Not applicable			