

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics 1, PG_00042018								
Field of study	Power Engineering, Power Engineering								
Date of commencement of studies			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 de	elivery		at the	at the university		
Year of study	1		Language of instruction		English				
Semester of study	2		ECTS cred	its		2.0	2.0		
Learning profile	general academic pro	ofile	Assessmer	nt form		exam			
Conducting unit	Faculty of Ocean Eng	gineering and S	hip Technolog	у		-			
Name and surname	Subject supervisor		dr hab. inż. Małgorzata Śmiałek-Telega						
of lecturer (lecturers)	Teachers		dr hab. inż. Małgorzata Śmiałek-Tel			ega			
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	0.0	0.0		0.0	30	
	E-learning hours inclu	uded: 0.0							
Learning activity and number of study hours	Learning activity	Participation in classes includ plan			Self-study SUM				
	Number of study hours	30		5.0		15.0 50		50	
Subject objectives	Acquisition of basic knowledge in selected branches of physics, both classical and modern. Acquiring the skills of qualitative understanding of selected principles and laws of classical physics and modern and quantitative analysis of selected phenomena in this area Understanding the basic techniques and methods of measurement of selected physical Developing social skills, such as emotional intelligence (the ability to work in a group of students), with a view to effective problem solving and tasks, sense of responsibility, honesty and integrity in academia and society.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_U01] can obtain information from literature and other sources, organize, interpret it and draw and formulate conclusions; has the ability to self-educate, interprets the results of completed engineering tasks, is able to design simple energy systems and their systems		The student is able to solve simple problems in the field of basic physics based on examples		[SU2] Assessment of ability to analyse information				
	[K6_W02] has a basic knowledge of physics (including optics, electricity and magnetism), chemistry, technical thermodynamics, fluid mechanics and general mechanics needed to understand and describe the basic phenomena occurring in devices and systems, energy plants and transmission networks and their environment		The student explains the basic knowledge in the field of physics, chemistry, technical thermodynamics and fluid mechanics, necessary to understand and describe the basic phenomena occurring in energy devices and systems and in their environment, the power industry and opportunities for further education			[SW1] Assessment of factual knowledge			

overview of the sizes found in nature : Principles of dynamics : fundamental interactions, the first law of dynamics, firston. The definition of work for constant are variable force, the assertion of labor and energy : he definition of work for constant are variable force, the assertion of labor and energy. The principle of conservation of mechanical energy. In principle or conservation of mechanical energy. In principle of conservation of mechanical energy, the principle of conservation of mechanical energy. The principle of conservation of mechanical energy, the principle of conservation of momentum : the toellor of force, the assertion of angular momentum. The toellorship between the force wat and engular momentum : the toellor of angular momentum is rotation, moment of inertia. Kinetic energy in a rot motion. Moment of force, the definition of angular momentum, the rotationship between the force wat and engular momentum is and engular momentum and energy. The principle of conservation of engular momentum of a rigid body, the principle of conservation of angular momentum is and engular momentum and energy. The special theory of relativity : Gallieen transformation , Michelson -Mortey experiment , Einstein's princ of relativity : simulaneity of events, the relativity of time, line diation, the principle of conservation of angular momentum and energy. Simple harmonic motion : swing , velocity, acceleration , force and energy of the harmonic motion . Pendulum , physical pendulum , damped harmonic motion . Force divibration , mechanical resonance . Mechanical waves : transverse and longitudinal waves , reflection of waves , starting waves , starting waves , waves , the intensity of the waves interference of harmonic waves , starting waves, and waves, ellentenoy of relativity. H								
equalities of motion trajectory, the third law of dynamics, finction. The definition of yows, conservative forces. variable force, the assertion of labor and energy, the definition of power, conservative forces. The principle of conservation of energy: energy potential, the potential energy of gravity, the law of conservation of mechanical energy, the principle of conservation of moment codet motion, collision of bodies. The principle of conservation of angular momentum in the bodies. The principle of conservation of angular momentum, the relationship between the torgue value and angular momentum, angular momentum, in angular momentum, the relationship between the torgue value and angular momentum, angular momentum, angular momentum angular moment	Subject contents	Introduction: Physical quantities , vectors , the international system of units (SI) , mass , time and length, ar overview of the sizes found in nature .						
conservation of mechanical energy. The principle of conservation of energy. The principle of conservation of momentum momentum: the center of mass, the momentum in of the bodies, the principle of conservation of moment rocket motion. Moment of force, the definition of angular momentum is rotation, moment of inertia, kinetic energy in a rot motion. Moment of force, the definition of angular momentum, the relationship between the torque val and angular momentum, angular momentum of a rigid body, the principle of conservation of angular momentum is rotation, the relationship between the torque val and angular is momentum. The special theory of relativity: Galilean transformation. Michelson Aborley experiment, Einstein's prin of relativity: simulianely of events, the relativity of time, time diation, twin paradox, length contraction Lorentz transformation is using, velocity, acceleration, force and energy of the harmonic motion. Pendulum, physical pendulum, damped harmonic motion, forced vibration, mechanical resonance. Mechanical waves : transverse and longitudinal waves , reflection of waves , harmonic waves , standing waves , vibrations, strings, Doppler effect. The gravitational field : the experience of Galiles's law of universal gravitation, the measurement of the gravitational field : the experience of Galiles's law in the relativity. Hydrostatics : properties of liquids, Pascal's law , hydrostatic pressure , Archimedes' principle , swimmir bodies. Hydrostatics : properties of liquids, Pascal's law , hydrostatic pressure , Archimedes' principle , swimmir bodies. Hydrostatics : properties of liquids, Pascal's law , hydrostatic pressure , Archimedes' principle , swimmir bodies. Hydrodynamics : characteristics of fluid motion, Bernoull's law		Principles of dynamics : fundamental interactions, the first law of dynamics, the second law of dynamics equations of motion trajectory , the third law of dynamics, friction. The definition of work for constant and variable force, the assertion of labor and energy , the definition of power , conservative forces .						
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waves , the intensity of the wave. Interference of harmonic waves , strengthening and decay of waves, standing waves , vibrations, strings , Doppler effect. The gravitational field : the experience of Galileo's law of universal gravitation , the measurement of the gravitational constant , the intensity and the potential of the gravitational field , gravity and weightlessne tidal , Kepler's laws , satellite motion , and second cosmic velocity , elements of the general theory of relativity. Hydrostatics : properties of liquids, Pascal's law , hydrostatic pressure , Archimedes' principle , swimmir bodies. Hydrodynamics : characteristics of fluid motion , Bernoulli's law , law Toricellego , viscosity, flow of non-viscous liquid and viscous , laminar and turbulent flow , Reynolds number , the resistance of the mediur theory of an ideal gas: kinetic theory of an ideal gas, diffusion, laws of thermodynamics, engines, heater coolers Prerequisites and co-requisites Subject passing criteria Passing threshold Percentage of the final gra and criteria Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final gra Recommended reading Basic literature David Halliday, Robert Resnick, Jearl Walker Fundamentals of Physical Subject Passing Presence of Physical Subject Passing Presence, Jearl Walker Fundamentals of Physical Subject Passing Presence, Jearl Walker Fundamentals of Physical Subject Passing Presence, Jearl Walker Fundamentals of Physical Passing P								
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viscous liquid and viscous , laminar and turbulent flow , Reynolds number , the resistance of the medium Temperature and heat: thermal expansion, heat, heat transfer processes, conductivity, convection.Kinet theory of an ideal gas: kinetic theory of an ideal gas, diffusion, laws of thermodynamics, engines, heater coolers Prerequisites and co-requisites Assessment methods Subject passing criteria Passing threshold Vritten test (open questions) 50.0% 100.0% Recommended reading Basic literature		Hydrostatics : properties of liquids, Pascal's law , hydrostatic pressure , Archimedes' principle , swimming bodies.						
theory of an ideal gas: kinetic theory of an ideal gas, diffusion, laws of thermodynamics, engines, heater coolers Prerequisites and co-requisites Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final grad Written test (open questions) Secommended reading Basic literature David Halliday, Robert Resnick, Jearl Walker Fundamentals of Phy		Hydrodynamics : characteristics of fluid motion , Bernoulli's law , law Toricellego , viscosity, flow of non- viscous liquid and viscous , laminar and turbulent flow , Reynolds number , the resistance of the medium.						
and co-requisites Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final grad Written test (open questions) Recommended reading Basic literature David Halliday, Robert Resnick, Jearl Walker Fundamentals of Phy		Temperature and heat: thermal expansion, heat, heat transfer processes, conductivity, convection.Kinetic theory of an ideal gas: kinetic theory of an ideal gas, diffusion, laws of thermodynamics, engines, heaters, coolers						
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Recommended reading Basic literature David Halliday, Robert Resnick, Jearl Walker Fundamentals of Phy				Percentage of the final grade				
	Recommended reading		David Halliday, <u>Robert Resnick,Jea</u> Wiley, any edition	in vvalker Fundamentals of Physics,				

	Supplementary literature	H.D. Young, R.A. Freedman, SEARS AND ZEMANSKYS UNIVERSITY PHYSICS WITH MODERN	
		PHYSICS, Addison-Wesley Publishing Company, wyd. 12. z 2008 r.	
		D.C. Giancoli, Physics Principles with Applications, 6th Ed., Addison-Wesley, 2005; Physics: Principles	
		with Applications with MasteringPhysics, 6th Ed., Addison-Wesley 2009.	
		R.A. Serway, Physics for Scientists and Engineers with Modern Physics, 8th Ed., Brooks/Cole, Belmont	
		2009; zapowiadane jest kolejne wydanie w styczniu 2013 r.	
		P.A. Tipler, G. Mosca, Physics for Scientists and Engineers, Extended Version, W. H. Freeman 2007	
	eResources addresses	Adresy na platformie eNauczanie: PG_00042018_PHYSICS I - ET- 2022/23 - Moodle ID: 28955 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28955	
Example issues/ example questions/ tasks being completed	Give the second law of dynamics and the conclusions resulting therefrom		
	What are conservative and non-conservative forces, what is the work done by them; Give examples of conservative and non-conservative forces		
	Give examples of systems moving harmonically; What equation describes the simple harmonic motion?; Write and draw a relationship deflection from the equilibrium position of the time; What happens if the frequency of the exciting force is close to the natural frequency of the system?		
Work placement	Not applicable		

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