



Subject card

Subject name and code	, PG_00052067						
Field of study	Nanotechnology						
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 Subject group related to scientific research 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			7.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Leszek Wicikowski					
	Teachers	dr inż. Leszek Wicikowski dr hab. inż. Agnieszka Witkowska dr hab. inż. Natalia Wójcik					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	60.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0 Adresy na platformie eNauczanie: Physics I - Moodle ID: 9148 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=9148						
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	60	15.0	100.0	175		
Subject objectives	This course provides a general education in the basic principles of classical physics,						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W03	The student knows the basic problems of classical mechanics, in particular kinematics and dynamics of translational and rotational motion. He can describe the harmonic motion and mechanical waves			[SW1] Assessment of factual knowledge		
	K6_U02	The student solves the classical physics problems. He can analyze physical phenomena by making necessary drawings. It derives the final results from the physical laws, performs calculations and derives final results. He applies the conversion of units and performs numerical calculations.			[SU4] Assessment of ability to use methods and tools		
	K6_U01	The student prepares to solve physics problems using the recommended textbooks. He remembers basic physical laws and understands them.			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		

Subject contents	Physics is a first-year physics course which introduces students to classical mechanics. Topics include: space and time; straight-line kinematics; motion in a plane; forces and equilibrium; Newton's laws of dynamics; particle dynamics; collisions and conservation laws; work and potential energy; vibrational motion; conservative forces; inertial forces and non-inertial frames; rigid bodies and rotational dynamics, harmonic motion and mechanical waves		
Prerequisites and co-requisites	Course is dedicated for students that not have taken high school physics and mathematics at extended level.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	two tests during the semestr	50.0%	100.0%
Recommended reading	Basic literature	D.Halliday, R.Resnick, J.Walker, Funadamental of physics, Wiley	
	Supplementary literature	Ohanian, Markert, Physics for Engineers and Scientists, vol.1, 3rd ed., New York, NY: Norton, 2007. ISBN:9780393930030	
	eResources addresses	Podstawowe https://openstax.org/details/books/university-physics-volume-1 - https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-polska - Physics I - Moodle ID: 9148 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=9148	
Example issues/ example questions/ tasks being completed	<p>The position of a particle changes from</p> $\mathbf{r}_1 = (2.0 \hat{i} + 3.0 \hat{j}) \text{ cm}$ <p>to</p> $\mathbf{r}_2 = (-4.0 \hat{i} + 3.0 \hat{j}) \text{ cm.}$ <p>What is the particle's displacement?</p> <p>A body of mass m moves in a horizontal direction such that at time t its position is given by</p> $x(t) = at^4 + bt^3 + ct,$ <p>where a, b, and c are constants. (a) What is the acceleration of the body? (b) What is the time-dependent force acting on the body?</p>		
Work placement	Not applicable		