



Subject card

Subject name and code	Physics I, PG_00040157						
Field of study	Mechanical Engineering, Mechanical Engineering						
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			e-learning		
Year of study	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Physics of Electronic Phenomena -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Grażyna Jarosz				
	Teachers		dr hab. inż. Grażyna Jarosz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	0.0	45
	E-learning hours included: 45.0						
Adresy na platformie eNauczenie: Physics I for D&PI 2020/2021 - Moodle ID: 7294 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=7294							
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	45		9.0		71.0	125
Subject objectives	Student knows fundamentals of Classical Mechanics, Electricity and Magnetism as well as Geometric Optics						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W02		The student knows the foundations of classical physics		[SW1] Assessment of factual knowledge		
	K6_U01		The student can predict the effects of the laws of physics		[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		

Subject contents

1. Units
2. Introduction to Kinematics, Vectors
3. Projectile Motion
4. Uniform Circular Motion
5. Newton's Laws of Motion
6. Frictional Force
7. Work and Energy
8. Simple Harmonic Motion
9. Damped Simple Harmonic Motion, Forced Oscillations and Resonance,
10. Momentum, Conservation of Linear of Momentum
11. Inelastic and Elastic Collisions
12. Rotation of Rigid Body, Angular Momentum, Conservation of Angular Momentum
13. Equilibrium
14. Sound Waves
15. Electric Field and Dipoles
16. Electric Flux and Gauss' Law
17. Electric Potential and Electric Potential Energy
18. Electrostatic Shielding, High-Voltage Breakdown, Capacitors
19. Polarization and Dielectrics
20. Electric Current, Resistance, Ohm's Law
21. Batteries and EMF
22. Magnetic Field and Lorentz Force
23. Moving Charge in B-field
24. Biot-Savart Law and Ampere's Law

	25. Electromagnetic Induction									
	26. Magnetic Materials									
	27. Light									
	28. Geometric Optics									
Prerequisites and co-requisites	High school level physics knowledge									
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Midterm colloquium</td> <td>50.0%</td> <td>30.0%</td> </tr> <tr> <td>Written exam</td> <td>50.0%</td> <td>70.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Midterm colloquium	50.0%	30.0%	Written exam	50.0%	70.0%
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Example issues/ example questions/ tasks being completed	A body of mass 2.0 kg makes an elastic collision with another body at rest and continues to move in the original direction but with one-fourth of its original speed. (a) What is the mass of the other body? (b) What is the speed of the two-body center of mass if the initial speed of the 2.0 kg body was 4.0 m/s?									
Work placement	Not applicable									