



Subject card

Subject name and code	Physics I, PG_00055087						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
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				5.0	
Learning profile	general academic profile	Assessment form				exam	
Conducting unit	Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Małgorzata Śmiałek-Telega					
	Teachers						
Lesson types	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: 0.0						
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 thermodynamics						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	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		
	K6_W02	The student knows the foundations of classical physics			[SW1] Assessment of factual knowledge		

Subject contents

Course content – lecture

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. Physical properties of fluids 28 Thermodynamics 28. Geometric Optics		
Prerequisites and co-requisites	High school level physics knowledge		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	50.0%	50.0%
	Exerciscs	50.0%	50.0%
Recommended reading	Basic literature	https://openstax.org/details/books/university-physics-volume-1 https://openstax.org/details/books/university-physics-volume-2	
	Supplementary literature	Halliday, David, Robert Resnick, and Jearl Walker. <i>Fundamentals of physics</i> . John Wiley & Sons, 2013.	
	eResources addresses		
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?		
Practical activites within the subject	Not applicable		

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