GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics, PG_00055440		
Field of study	Mechatronics		
Date of commencement of studies	October 2021	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 delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	9.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Mechanics and Mechatronics -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Małgorzata Śmiałek-Telega	
	Teachers	dr inż. Joanna Grzelak	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	45.0	15.0	15.0	0.0	0.0	75

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	75	39.0	111.0	225

Subject objectives

To expand knowledge of selected sections of classical physics and modern physics.To acquire the ability to solve tasks using integral and differential calculus.To learn techniques and methods of measuring selected physical quantities.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U01] is able to acquire infromation form literature, databases and other, properly choosen sources, integrate these infomration, interpret them, draw conclusions and formulate opinions	Student is able to obtain information from various sources: literature, databases, and others. Student is able to integrate obtained information, interpret it, as well as draw conclusions and formulate and justify opinions.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K6_W02] has a knowledge in term of physics that includes mechanics, thermodynamics, optics, electricity, magnetism, atomic physics, nuclear physic, solid state physics, including the knowledge necessary to understand basic phenomena occurring in mechatronic elements and systems and its surroundings	Student has knowledge of physics: mechanics, thermodynamics, optics, electricity and magnetism, atomic physics, nuclear physics, solid state physics, including the knowledge necessary to understand basic phenomena in the environment.	[SW1] Assessment of factual knowledge
[K6_U03] has self-learning skills	The student has the ability to self-educate.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

Subject contents	1. General mechanics: kinematics, dynamics, statics, rigid body mechanics;2. Fluid mechanics;3. Thermodynamics;4. Acoustics;4. Electrodynamics (electricity and magnetism);5. Optics;6. Particle physics, nuclear, atomic and molecular physics, solid state physics, fluid physics;7. Theoretical mechanics (classical, Lagrange, Hamiltonian, quantum (relativistic), statistical, special theory of relativity;8. Elements of astronomy and astrophysics.
Prerequisites and co-requisites	Basic knowledge of general physics.Basic mathematical knowledge, basic knowledge of differential calculus and vector analysis.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	50.0%	30.0%
Exercises	50.0%	35.0%
Lecture	50.0%	35.0%

Recommended reading

Basic literature	J. Massalski, M. Massalska, Physics for Engineers, vol. 1 and 2, Warsaw 2013 (as well as any other edition);J. Orear, Physics, volumes 1 and 2, Warsaw 2004;David Halliday, Robert Resnick, Jearl Walker, Fundamentals of Physics. Vol. 1-5, Scientific Publishing House PWN, 2012 (as well as any other edition);I.W. Savelyev, Lectures in Physics, Vol. 1, 2 and 3, Scientific Publishing House PWN, Warsaw, 2003
Supplementary literature	A. Januszajtis, Physics for Polytechnics, vol. 1-3, Warsaw 1991;Paul A. Tipler, Ralph A. Llewellyn, Modern physics, Scientific Publishing House PWN, Warsaw 2012
eResources addresses	Podstawowe https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-2 - The textbook emphasizes the links between theory and practical applications, explaining physical issues in an interesting and understandable way, but with the necessary mathematical rigor. https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-1 - The textbook emphasizes the links between theory and practical applications, explaining physical issues in an interesting and understandable way, but with the necessary mathematical rigor. https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-3 - The textbook emphasizes the links between theory and practical applications, explaining physical issues in an interesting and understandable way, but with the necessary mathematical rigor. Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	State Newton's second principle of dynamics and the conclusions drawn from it.Explain why does an airplane fly?Give and explain the formula for the Lorentz force. How does the return of the force change depending on the signs of the charge (draw)?State Heisenberg's indeterminacy principle.
Work placement	Not applicable