GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introduction to Higher Physics, PG_00055138		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute Of Naval Architecture -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Małgorzata Śmiałek-Telega	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	30.0	0.0	0.0	0.0	30

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	30	6.0	39.0	75

Subject objectives

The aim of the classes conducted in the form of tutorial is to learn and master strategies for solving examples from classical physics necessary to solve engineering problems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W02	has knowledge of classical physics necessary to solve engineering problems.	[SW1] Assessment of factual knowledge
K6_U01	can solve tasks from classical physics and interpret necessary solutions needed for engineering problems.	[SU1] Assessment of task fulfilment

Subject contents

Problem-solving strategies based on equations of motion and interpretation of the derivative. Graphical representation of movement. Classification of forces. Information about the system based on Newton's laws of motion for translation and rotation. Modeling the dynamics of motion of simple systems. Testing the balance of a mechanical system. Conclusions from the principle of conservation of mechanical energy. Conclusions from the principle of conservation of momentum and angular momentum. Strategies for solving problems of systems moving in harmonic and damped harmonic motion based on equations of motion and derivative interpretation. Problem-solving for DC circuits. Information about the thermodynamic system on a micro and macro scale. State functions and process functions.

Prerequisites and co-requisites

High school level physics knowledge

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Midterm colloquium	70.0%	100.0%

Recommended reading

Basic literature	K. Wrzask, Physics problems step by step, Faculty of Mechanical Engineering and Ship Technology, PG
Supplementary literature	https://openstax.org/details/books/university-physics-volume-1 https://openstax.org/details/books/university-physics-volume-2
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	A hoop of mass m = 0.2 kg and radius r = 25 cm is released and rolls without slipping on a ramp with an inclination angle of = 60 . Moment of inertia for a hoop I = mr^2 a) Please outline all the forces acting on the hoop. b) Please write down the second law of dynamics for the translational and rotational motion of the hoop. c) What is the linear acceleration of the hoop?
Work placement	Not applicable

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