GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00065249		
Field of study	Technical Physics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Optional subject group Humanistic-social subject group
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	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division of Complex Systems Spectroscopy -> Institute of Physics and Applied Computer Science -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Ireneusz Linert	
	Teachers	dr inż. Ireneusz Linert	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=14778

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	15	1.0	9.0	25

Subject objectives

Physics is all around us. It underlies the operation of GPS systems, space flights, and wireless technology. Technological progress has always been closely linked to progress in physics.

The aim of the lecture is to show the development of physics from ancient times to the present, in the context of groundbreaking discoveries and great scientists.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W71] has general knowledge in humanistic, social, economic or legal sciences	The purpose of the course is to show the civilization significance of physics and its applications in technology.	[SW1] Assessment of factual knowledge
[K6_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems in a social environment	Understanding the interrelationships between different areas of science.	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_K71] is conscious of the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment	Awareness that physical and technical sciences represent only a portion of civilization benefits and that interdisciplinary activities are required.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents

Course content – lecture
The earliest traces of cultures, astronomy and technology from the Paleolithic to the beginning of the Iron Age. Mathematics, astronomy, technology of Mesopotamia and Egypt. Greek science and technology. Achievements of Roman engineers. Natural sciences and technical progress in the Middle Ages. The Copernican revolution. Galileo. Differential calculus in physics, Newtonian mechanics and gravity. The beginnings of thermodynamics, the discovery of atmospheric pressure and vacuum, the description of gas transformations, the steam engine. Optics from Kepler to Newton: refraction, diffraction, interference. Physics of the 19th century: electricity and magnetism. The industrial revolution. The discovery of radioactivity, the electron and the nucleus, the beginnings of atomic, nuclear and elementary particle physics, the periodic table, the discovery of X-rays, the first models of the atom, matter waves, the old quantum theory, the beginnings of quantum mechanics. Einstein and the theory of relativity. Astrophysics and cosmology. The universe. Elementary particles.

<table>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
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<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>written test</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>A. K. Wróblewski, Historia fizyki</td></tr>
<tr><td>Supplementary literature</td><td>Harry Varvoglis, History and Evolution of Concepts in Physics, Springer 2014</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Simple machines. Concepts of the structure of the solar system and the universe.</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="2">Not applicable</td></tr>
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