



## Subject card

Subject name and code	, PG_00065249						
Field of study	Technical Physics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	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	Zakład Spektroskopii Układów Złożonych -> Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Ireneusz Linert				
	Teachers		dr inż. Ireneusz Linert				
Lesson types and methods of instruction	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						
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		0.0		0.0	15
Subject objectives	<p>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.</p> <p>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.</p>						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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		
	[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			
Subject contents	<p>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.</p>						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		written test	51.0%
Recommended reading	Basic literature	A. K. Wróblewski, Historia fizyki  B. Orłowski, Powszechna historia techniki	
	Supplementary literature	Harry Varvoglis, History and Evolution of Concepts in Physics, Springer 2014	
	eResources addresses	Adresy na platformie eNauczenie: Fizyka wokół nas - Moodle ID: 14778 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=14778">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=14778</a>	
Example issues/ example questions/ tasks being completed	Simple machines. Concepts of the structure of the solar system and the universe. Models of the atom and atomic nucleus.		
Work placement	Not applicable		

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