GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00069092		
Field of study	Technical Physics, Materials Engineering, Mathematics, Nanotechnology, Nanotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Optional subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Solid State Physics -> Faculty of Applied Physics and Mathematics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Jarosław Rybicki	
	Teachers	prof. dr hab. inż. Jarosław Rybicki	

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	2.0	8.0	25

Subject objectives

The objective of the course is to familiarize students with the evolution of ideas about the universe in the whole history of humanity: from the prehistoric times (outline of selected mythologies of peoples, the structure of myth), the ideas of the ancient Greeks; medieval, Renaissance cosmology and cosmography, until the early modern times (Copernicus, Galileo, Kepler, Newton) and further development in the 20th and 21st centuries, up to the present time (the discovery of dark energy and dark matter).

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U02] Can independently determine the directions of self-development and implement the self-education process it in order to raise professional competences.	The student can study individually gaining knowledge from paper literature and internet resources.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K7_W07] Has knowledge of the development trends and most important new achievements of the fields of science and scientific disciplines relevant to materials engineering and related disciplines.	Knowledge of history and evolution of our understanding of the universe provides a sound background of humanistic education and helps undertaking and solving interdisciplinary problems.	[SW1] Assessment of factual knowledge

Subject contents

Prehistoric Astronomy. Ancient Non-Western (Oceania, America, India, Africa) and Western (Babylonian, Egyptian, Judeo-Christian, Greek-Roman) Cosmographies and Cosmologies. The world of Aristotle and Ptolemy. Medieval and Renaissance Cosmography. Copernican Revolution and Its Significance. Origins of the Cotemporary Image of the World (Kepler, Galileo). The Essence of the Dispute between Old and New Cosmography (Hook, Newton, Descartes). Astronomy of the 19th Century. History of Contemporary Astronomy and Cosmology. Astronomical and Cosmological Findings from the Theory of General Relativity. Discovery of Hubbles Law and Its Significance Development of the big Bang Concept, the Inflationary Universe. Steady State Models (Hoyle). Plasma (Electrostatic) Models. The Discovery of Background Radiation and Its Significance. Anthropic Principles. Origins of Relativistic Cosmology. History of Research on the Formation and Evolution of Stars and Galaxies. Large-Scale Structure of the Cosmos. Discovery of Dark Energy and Dark Matter. Concept of Multiverse and Its Philosophical Consequences. *Mathematicality* of the World. Cognizability of the Incognizable. Status of Cosmology.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written test	51.0%	100.0%

Recommended reading	Basic literature	Mircea Eliade - Sacrum mit historia - Wybór esejów wyd 3 (1993) Michael Hoski - Historia astronomi, WUW (2007) Michał Heller, Ostateczne wyjaśnienia Wszechświata, Universitas Edward Harrison, Cosmology, Cambridge University Press (2001)
	Supplementary literature	Helaine Selin, Astronomy across cultures, The History of Non-Western Astronomy, Springer (2000)
	eResources addresses	
Example issues/ example questions/ tasks being completed	Discuss the notion of mith Discuss Ptolemys system of the world. Discuss the oldest measurements of distances between celestial bodies. Discuss the essence of the Copernican revolution. The discovery of background radiation and its significance on the development of cosmology.	
Work placement	Not applicable	

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