



## Subject card

Subject name and code	Physical Cosmology, PG_00062860						
Field of study	Technical Physics						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish not available		
Semester of study	6	ECTS credits			2.0		
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 hab. Tomasz Wąsowicz				
	Teachers		dr hab. Tomasz Wąsowicz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	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	0.0		0.0		30
Subject objectives	An introduction to theoretical and observational foundations of modern physical cosmology.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U09		The student is able to acquire, filter and correctly use information from various sources		[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W02		The student will be able to understand phenomena from different areas of physics and chemistry and apply them to the analysis of astronomical objects.		[SW1] Assessment of factual knowledge		
Subject contents	1.Introduction to the cosmology. 2.Elements of the special and general theory of relativity. 3.Metric space and cosmological solutions. 4.Observational foundations of cosmology. 5.The problem of dark matter and missions: Supernova Cosmology Project, High-Z Supernova Search, etc. 6.Evolution of the Universe. The so-called "big bang" model. 7.Structure of the Universe. 8. Structure and evolution of planetary systems.						
Prerequisites and co-requisites	Knowledge of the fundamentals of physics - completed course in the subject "Fundamentals of Physics" or "Physics I and II"						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Exam		50.0%		100.0%		
Recommended reading	Basic literature		L. Jarczyk, Wczesny rozwój Wszechświata, WNT Warszawa (2012)  E. Rybka Astronomia ogólna, PWN 1976				
	Supplementary literature		Paul A. Tipler, Ralph A. Llewellyn, Fizyka współczesna, Wydawnictwo Naukowe PWN, 2012				

	eResources addresses	Adresy na platformie eNauczenie: Kosmologia fizyczna sem. let. 2023/2024 - Moodle ID: 38467 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38467">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38467</a>
Example issues/ example questions/ tasks being completed	Standard model of the structure of matter versus primordial nucleosynthesis Supernova Cosmology Project Postulates of the special theory of relativity Postulates of the general theory of relativity	
Work placement	Not applicable	