

Subject card

Subject name and code	Astronomy, PG_00138143						
Field of study	Biology						
Date of commencement of studies	October 2024		Academic year of realisation of subject				
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish Polish language		
Semester of study	6		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Zakład Oddziaływań Fundamentalnych, Grawitacji i Kosmologii -> Institute of Theoretical Physics and Astrophysics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Piotr Gnaciński				
	Teachers		dr hab. Piotr Gnaciński				
Lesson types	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		20.0	50
Subject objectives	Students will learn the ways we obtain information about astronomical objects. Students will learn about astronomical objects and the laws of physics responsible for their formation. Students will learn about astronomical phenomena.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
			The student knows the structure of various astronomical objects. The student can identify methods for studying celestial bodies. The student understands the phenomena occurring in astronomical objects.		[SK4] test/exam - oral or written		

Subject contents	The history of astronomy in the context of the development of natural sciences. Movement of celestial bodies in the sky, time calculation - calendar. Astronomical observations in the optical, radio and gamma ray range. The impact of Earth's atmosphere on astronomical observations. Structure of the Earth and the atmosphere; ozone hole, ionosphere, aurora borealis, greenhouse effect. Rotational and circular motion of Earth. Earth-Moon system: lunar orbit, sidereal, synodic and draconian months, solar and lunar eclipses, tides. Overview of the physical properties of planets, moons and minor bodies in the Solar System; gravitational resonance; other planetary systems. Parameters and structure of the Sun. Solar activity and its impact on Earth. The neutrino problem. Brightness, temperature, radii and mass of stars. The Hertzsprung-Russell (H-R) diagram. Multiple and variable stars. Stellar clusters and associations. Interstellar matter: emission, reflection and dark nebulae. Evolution of stars on the H-R diagram. Late stages of the evolution of massive stars: supernovae, neutron stars, black holes. Structure of our Galaxy: spiral structure, rotation. Distribution of interstellar matter in the Galaxy. Other galaxies: classification and physical characteristics, determination of distances, active galactic nuclei and galaxy clusters. Elements of cosmology: Hubble's law, basic cosmological models, cosmic microwave background radiation, primordial nucleosynthesis, evolution of the Universe.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Multiple choice test	51.0%	100.0%
Recommended reading	Basic literature	J. Kreiner, Astronomia z Astrofizyką	
	Supplementary literature	brak	
	eResources addresses		
Example issues/ example questions/ tasks being completed	-		
Work placement	Not applicable		

Document generated electronically. Does not require a seal or signature.