

Subject card

Subject name and code	The formation of chemical elements in nature, PG_00179521						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Optional 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	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Piotr Mucha				
	Teachers						
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		7.0		18.0	55
Subject objectives	familiarizing students with the Big Bang theory familiarizing students with the origin of matter in the Universe familiarizing students with the structure of atoms familiarizing students with the formation and evolution of stars familiarizing students with the nucleosynthesis of elements in the Universe familiarizing students with the relationship between nucleosynthesis and the phenomenon of life						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_K05] Understands the need for independent search of information in scientific literature and popular science magazines.	presents information about the evolutionary paths of stars	[SK4] test/exam - oral or written
	[CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.	demonstrates the ability to search publicly available sources of information	[SK4] test/exam - oral or written
	[CHEMMU2_U03] Finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry.	presents the assumptions of the Big Bang theory	[SU4] test/exam - oral or written
	[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	presents the relationships between elemental composition and the functioning of living organisms	[SW4] test/exam - oral or written
	[CHEMMU2_W02] Has extended and in-depth knowledge in the field of basic chemistry.	presents methods of nucleosynthesis of chemical elements	[SW4] test/exam - oral or written
	[CHEMMU2_U10] Reads with understanding scientific and popular science chemical texts in English.	presents knowledge about the synthesis of elements in the Universe	[SU4] test/exam - oral or written
	[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.	presents the nature of the structure of matter and chemical elements	[SU4] test/exam - oral or written
[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	presents the latest discoveries concerning the synthesis of chemical elements	[SW4] test/exam - oral or written	
Subject contents	the Big Bang theory, the origin of matter in the universe, structure of the Universe, the formation and evolution of stars, nucleosynthesis of elements in the universe, the relationship between nucleosynthesis and the phenomenon of life		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test questions	50.0%	100.0%
Recommended reading	Basic literature	S. Hawking Krótka historia czasu, Wyd. Zysk i S-ka, 2007 Chown Marcus "Magiczny Tygiel. O Pochodzeniu Atomów" Zysk i S-ka, 2004 Andrzej Kabziński Kosmochemia. Ewolucja i budowa Wszechświata, PWN, 2023	
	Supplementary literature	Murdin Paul, Wszechświat. Biografia, Prószyński Media, 2022	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. According to current knowledge, the smallest (indivisible) particles of matter are a. Atoms b. Neutrons c. Quarks d. Protons 2. The current age of the universe is estimated to be approximately (billion years) a. 4-5 b. 8-10 c. 13.5-14 d. 19-20		
Work placement	Not applicable		

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