

Subject card

Subject name and code	, PG_00159222						
Field of study	Geology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Geomorphological Reconstructions -> Department of Geomorphology and Quaternary Geology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Karol Tylmann				
	Teachers						
Lesson types	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	To be familiar with contemporary possibilities of cosmogenic nuclides analysis in geology.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[GEOLL3_K03] is willing to exercise caution and criticism in receiving information from scientific literature, the Internet and other media related to natural sciences		To be ready to be careful and critical in acceptance of information from scientific literature, Internet and other sources related to cosmogenic nuclides research.		[SK1] oral statement/conversation/discussion		
	[GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences		To know and to understand terminology related to cosmogenic nuclides and their applications in geoscience.		[SW4] test/exam - oral or written		
	[GEOLL3_W04] knows and understands phenomena and processes occurring in the past and today in the interior of the Earth and on its surface, defines the methods of how to study them		To know and to understand phenomena and processes occurring in the past and today on the Earth, which may be analysed with cosmogenic nuclides, to define methods of these studies.		[SW4] test/exam - oral or written		

Subject contents	1. Cosmic ray and its impact on geospheres.		
	2. Genesis and classification of cosmogenic nuclides occurring in the environment.		
	3. Measurements of the cosmic ray intensity and production rate of the cosmogenic nuclides.		
	4. Methods of measurements of cosmogenic nuclides concentration in samples.		
	5. Calibration sites.		
	6. Selected examples of the application of cosmogenic nuclides in geological studies.		
	7. Exposure and burial dating with in-situ produced cosmogenic nuclides.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	In-lecture discussioun	51.0%	20.0%
	Written test	51.0%	80.0%
Recommended reading	Basic literature	Dunai T. 2010. Cosmogenic nuclides. Principles, Concepts and Applications in the Earth Surface Sciences. Cambridge University Press, pp. 187.	
	Supplementary literature	Gosse J.C., Philips F.M. 2001. Terrestrial cosmogenic nuclides: theory and application. Quaternary Science Reviews 20, 1475-1560.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Cosmic rays definition, origin, nature and properties		
	2. Radioactive decay nature and types of decay		
	3. Cosmic radiation observations and measurements		
	4. Measurements of in-situ cosmogenic nuclides sampling, samples processing, measurements		
Work placement	Not applicable		

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