

**Subject card**

Subject name and code	, PG_00120921						
Field of study	Geology						
Date of commencement of studies	October 2024	Academic year of realisation of subject				2026/2027	
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 Patryk Sitkiewicz				
	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	Presentation of the theoretical foundations of methods for dating sediments and determining the age of natural processes, with particular emphasis on the methods most frequently used in geology and geomorphology. Familiarity with measuring equipment, calculation procedures, and principles of proper interpretation of results.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[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		Knows and understands phenomena and processes occurring in the past and present inside and on the Earth's surface and defines methods for dating them.			[SW4] test/exam - oral or written	
	[GEOLL3_W01] knows and understands the basic natural phenomena and explains their course in relation to geological processes		Knows and understands basic natural phenomena and explains their process in relation to geological processes at a specific time, which can be determined using selected dating methods.			[SW4] test/exam - oral or written	
	[GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences		Knows and understands the terminology related to relative and absolute dating methods.			[SW4] test/exam - oral or written	
Subject contents	<ol style="list-style-type: none"> <li>Basics of stratigraphy.</li> <li>How was the age of the Earth determined, and what was the timing of the most important events on our planet? What are the uncertainties and unknowns?</li> <li>Selected absolute dating methods (C 14, Cs 137, Pb 210, TL and OSL, K-Ar, Ar-Ar, U/Th, Be and Cl, dendrochronology, and varve chronology).</li> <li>Selected relative dating methods (paleomagnetism, core correlation, tephrochronology, palynology chronology, biostratigraphy, 16O / 18O, stratigraphic method).</li> <li>Examples of the use of selected dating methods in research in northern Poland - uncertainty assessment and interpretation of results.</li> </ol>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	51.0%	100.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>• Bluszcz, A. (2000). Datowanie luminescencyjne osadów czwartorzędowych-teoria, ograniczenia, problemy interpretacyjne. Zeszyty Naukowe. Matematyka-Fizyka/Politechnika Śląska 86, 3-104.</li> <li>• Rink, W. J., Thompson, J. W. (2015). Encyclopedia of scientific dating methods. Springer.</li> <li>• Walanus, A., Goslar, T. (2009). Datowanie Radiowęglowe. Wydawnictwo AGH.</li> <li>• Walker, M. (2005). Quaternary dating methods. John Wiley &amp; Sons.</li> </ul>	
	Supplementary literature	<ul style="list-style-type: none"> <li>• Faure, G., Mensing, T.M. (2004). Isotopes: Principles and Applications. John Wiley and Sons.</li> <li>• Lian, O. B., Roberts, R. G. (2006). Dating the Quaternary: progress in luminescence dating of sediments. Quaternary Science Reviews, 25(19-20), 2449-2468.</li> <li>• Tauxe, L. (2010). Essentials of paleomagnetism. University of California Press.</li> </ul>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<p>What is half-life? How are dendrochronological results calibrated to obtain the calendar age of samples?          What is varve chronology, what types of sediments can be studied, and what is its time range?</p>		
Work placement	Not applicable		

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