

Subject card

Subject name and code	ML I: Isotopic methods in archaeology, PG_00151577						
Field of study	Archaeology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study 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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Institute of Archaeology -> Faculty of History -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Łukasz Pospieszny				
	Teachers		dr Łukasz Pospieszny				
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		2.0		20.0	52
Subject objectives	To introduce students to the basic isotopic methods used in the study of subfossil human, animal and plant remains, and the practice of analyzing and interpreting the data obtained.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[ARCHMU2_W04] Has an in-depth knowledge of the main directions of development and the most important new achievements in the field of archaeology	The student is familiar with the latest research trends in archaeology at the intersection with the natural sciences.	[SW4] test/exam - oral or written
	[ARCHMU2_U01] Is able to use the knowledge he possesses – formulate and solve complex and unusual theoretical and practical problems through: - proper selection of sources and information derived from them, evaluation, critical analysis, synthesis and presentation of this information, - selection and application of appropriate methods and tools, including advanced information and communication techniques, - adaptation of existing methods and tools or development of new ones	The student is able to formulate research questions in the field of bioarchaeology and address them using appropriate categories of data, methods, and analytical tools.	[SU4] test/exam - oral or written
	[ARCHMU2_W07] Knows and understands the fundamental dilemmas of modern civilization	The student possesses knowledge of the problems of contemporary civilization and their origins.	[SW4] test/exam - oral or written
	[ARCHMU2_K02] Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on his own	The student possesses the ability to collaborate with experts from other fields of science.	[SK4] test/exam - oral or written
	[ARCHMU2_W06] Knows and understands the main development tendencies of the humanities	The student possesses knowledge of new trends in the humanities and their impact on archaeology.	[SW4] test/exam - oral or written
	[ARCHMU2_W03] Knows to an in-depth degree the terminology, theories, methodology and tools of description in the field of archaeology and related sciences	The student possesses knowledge in the analysis and interpretation of isotopic research results in archaeology.	[SW4] test/exam - oral or written
	[ARCHMU2_W01] Has an in-depth, extended and structured knowledge of archaeology	The student is familiar with selected issues in scientific analyses in archaeology.	[SW4] test/exam - oral or written
Assessment methods and criteria	[ARCHMU2_K01] Is ready to critically evaluate his/her knowledge and received content	The student is able to critically evaluate content and their own knowledge about the past and the methods of studying it.	[SK4] test/exam - oral or written
Subject contents			
Isotope Geochemistry - Basic Concepts. Isotopes of carbon and nitrogen: Dietary reconstruction. Radiocarbon dating and the reservoir effect. Isotopes of strontium: Mobility reconstruction. Isotopes of oxygen: Climate and mobility reconstruction. Non-standard isotope systems. Lipid analysis: Chromatography and mass spectrometry. Paleoproteomics.			
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written assessment (grading criteria according to the University of Gdańsk Study Regulations)	51.0%	100.0%
Recommended reading		Basic literature Pollard, A. M., Armitage, R. A., Makarewicz, C. A. 2023. Handbook of Archaeological Sciences, Wiley.	

	Supplementary literature	Bentley, R. A. 2006. Strontium isotopes from the earth to the archaeological skeleton: A review. <i>Journal of Archaeological Method and Theory</i> 13(3), 135-187. Britton, K. 2019. Isotope Analysis for Mobility and Climate Studies. In: M. P Richards, S. Fraser, K. Britton (eds.), <i>Archaeological Science: An Introduction</i>. Cambridge: Cambridge University Press, 99-124. Casanova, E., Knowles, T. D. J., Bayliss, A. et al. 2020. Accurate compound-specific ¹⁴C dating of archaeological pottery vessel. <i>Nature</i> 580, 506-510. Craig, O., Saul, H., Spiteri, C. 2020. Residue Analysis. In: M. Richard, K. Britton (eds.), <i>Archaeological Science: An Introduction</i>. Cambridge: Cambridge University Press, 70-98. Hendy, J., Van Doorn, N., Collins, M. 2020. Proteomics. In: M. P Richards, S. Fraser, K. Britton (eds.), <i>Archaeological Science: An Introduction</i>. Cambridge: Cambridge University Press, 35-69. Lanting, J. N., van der Plicht, J. 1998. Reservoir effects and apparent ¹⁴C-ages, <i>The Journal of Irish Archaeology</i> IX, 151-164. Price, T. D. 2014. An Introduction to the Isotopic Studies of Ancient Human Remains, <i>Journal of the North Atlantic Special Volume 7: Viking Settlers of the North Atlantic: An Isotopic Approach (2014-2018)</i>, 71-87.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Impact of pollutants on the isotopic composition of strontium in the natural environment. Radiocarbon dating of organic residues in ceramics. Isotopic reconstruction of the trophic food web.	
Work placement	Not applicable	

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