University of Gdańsk

Subject card

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| Subject name and code | SC IV: Isotopic methods in archaeology, PG_00151589 | | |
| Field of study | Archaeology | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | 2024/2025 |
| Education level | Master's studies | Subject group | Obligatory subject group in the field of study<br>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 | 4.0 |
| 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 | 0.0 | 0.0 | 30.0 | 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 | 70.0 | 102 |

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| 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 |
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| [ARCHMU2_U04] Knows how to lead a debate | The student can conduct a scholarly discussion. | [SU1] oral statement/conversation/ discussion |
| [ARCHMU2_U02] Can formulate and test hypotheses related to simple research problems | The student is able to formulate and test research hypotheses in the field of isotopic archaeology. | [SU2] presentation/project/paper/ report |
| [ARCHMU2_U03] Can communicate on topics related to archaeology and archaeological heritage with diverse audiences | The student is able to disseminate the results of archaeological and scientific research. | [SU2] presentation/project/paper/ report |
| [ARCHMU2_K01] Is ready to critically evaluate his/her knowledge and received content | The student can critically assess content and their own knowledge regarding the past and methods of its study. | [SK2] presentation/project/paper/ report |
| [ARCHMU2_W02] Has an in-depth knowledge of the connections between archaeology and other sciences, allowing to integrate the achievements of various disciplines in the study of a selected era | The student is familiar with the connections between isotopic archaeology and the natural sciences. | [SW2] presentation/project/paper/ report |
| [ARCHMU2_U06] Is able to manage the work of a team in the conditions of office and field work | The student can lead a team of archaeologists and specialists from other fields of science. | [SU1] oral statement/conversation/ discussion |
| [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 has knowledge in the theory and practice of isotopic research in archaeology. | [SW2] presentation/project/paper/ report |
| [ARCHMU2_U08] Is able to independently plan and implement his/her own lifelong learning and guide others in this regard | The student can plan and develop their professional career in the field of archaeology and beyond. | [SU1] oral statement/conversation/ discussion |
| [ARCHMU2_U01] Is able to use the knowledge he possesses – formulate and solve complex and unusual theoretical and practical problems through:<br>- proper selection of sources and information derived from them, evaluation, critical analysis, synthesis and presentation of this information,<br>- selection and application of appropriate methods and tools, including advanced information and communication techniques,<br>- adaptation of existing methods and tools or development of new ones | The student can pose and answer research questions using appropriate categories of data, methods, and analytical tools. | [SU2] presentation/project/paper/ report |
| [ARCHMU2_W05] Has in-depth knowledge that allows him to criticize, analyze and interpret various sources in archaeological research | The student is familiar with methods of critique, analysis, and interpretation of isotopic data in archaeology. | [SW2] presentation/project/paper/ report |
| [ARCHMU2_U07] Is able to interact with others in a teamwork and take a leading role | The student can collaborate within research teams and take on the role of a leader. | [SU1] oral statement/conversation/ discussion |

## 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 ofoxygen: Climate and mobility reconstruction. Non-standard isotope systems. Lipid analysis: Chromatographyand mass spectrometry. Paleoproteomics.

## Prerequisites and co-requisites

Basic knowledge of world archaeology.

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Successful completion of coursework and active participation in classes | 51.0% | 100.0% |

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| Recommended reading | Basic literature | Pollard, A. M., Armitage, R. A., Makarewicz, C. A. 2023. Handbook of Archaeological Sciences, Willey. |
| | Supplementary literature | Bentley, R. A. 2006. Strontium isotopes from the earth to the archaeological skeleton: A review. Journal of Archaeological Method and Theory 13(3), 135-187.Britton, K. 2019. Isotope Analysis for Mobility and Climate Studies. In: M. P Richards, S. Fraser, K. Britton (eds.), Archaeological Science: An Introduction. 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. Nature 580, 506-510.Craig, O., Saul, H., Spiteri, C. 2020. Residue Analysis. In: M. Richard, K. Britton (eds.), Archaeological Science: An Introduction. Cambridge: Cambridge University Press, 70-98.Hendy, J., Van Doorn, N., Collins, M. 2020. Proteomics. In: M. P Richards, S. Fraser, K. Britton (eds.), Archaeological Science: An Introduction. Cambridge: Cambridge University Press, 35-69.Lanting, J. N., van der Plicht, J. 1998. Reservoir effects and apparent 14C-ages, The Journal of Irish Archaeology IX, 151-164.Price, T. D. 2014. An Introduction to the Isotopic Studies of Ancient Human Remains, Journal of the North Atlantic Special Volume 7: Viking Settlers of the North Atlantic: An Isotopic Approach (2014-2018), 71-87. |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | Impact of pollutants on the isotopic composition of strontium in the natural environment.<br>Radiocarbon dating of organic residues in ceramics.<br>Isotopic reconstruction of the trophic food web. | |
| Work placement | Not applicable | |

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