



**7<sup>th</sup> – 11<sup>th</sup> April 2025**

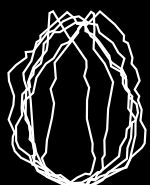
**Seminar for students (master/PhD) & Post-Docs:**

# TRACEOLOGY II

Introduction to Theory and Methods  
in Archaeological Research

## MAIN TOPICS

- 1 Theoretical background and framework of use-wear in the archaeological research
- 2 Application of state-of-the-art methods and techniques in the TraCER lab
- 3 Discussion of archaeological applications based on case studies



**MONREPOS**

Archaeological Research Centre and Museum  
for Human Behavioural Evolution

[www.monrepos.leiza.de](http://www.monrepos.leiza.de)



LEIBNIZ-ZENTRUM  
FÜR ARCHÄOLOGIE

## MORE INFORMATION & REGISTRATION

[www.researchgate.net/project/Laboratory-for-Traceology-and-Controlled-Experiments-TraCER-monrepos.leiza.de](http://www.researchgate.net/project/Laboratory-for-Traceology-and-Controlled-Experiments-TraCER-monrepos.leiza.de)



LEIBNIZ-ZENTRUM  
FÜR ARCHÄOLOGIE



**MONREPOS**

Archäologisches Forschungszentrum und Museum  
für menschliche Verhaltensevolution

## Seminar

### Traceology II: Introduction to Theory and Methods in Archaeological Research

TraCEr, Laboratory for Traceology and Controlled Experiments  
MONREPOS, LEIZA

7th-11th April 2025, Schloss MONREPOS, 56567, Neuwied, Germany.

Six years after its first edition in 2019, the Laboratory for Traceology and Controlled Experiments (TraCEr) at MONREPOS offers its second summer school on "*Traceology II: Introduction to Theory and Methods in Archaeological Research*" in 2025.

The Laboratory for Traceology and Controlled Experiments (TraCEr) at MONREPOS, Leibniz-Zentrum für Archäologie (LEIZA), will offer its second seminar on "*Traceology II: Introduction to Theory and Methods in Archaeological Research*" in 2025. This 5-day seminar covers three main topics: 1) theoretical background and framework of use-wear and residue analysis in the archaeological research, 2) application of state-of-the-art methods and techniques in the TraCEr lab, and 3) discussion of archaeological applications based on case studies.

Master and PhD students, as well as post-docs, are welcome to participate. Contact us at [tracer-monrepos@leiza.de](mailto:tracer-monrepos@leiza.de) for information and registration.

#### 1. Short description of the seminar

From the earliest manifestations of technology to modern societies, technology has allowed humans to express and develop new ways of language. At the same time, technology also reflects symbology, and ethnic and social status patterns, allowing the recognition and interpretation of different traits in the evolution and expansion of Human Behaviour. Technological changes became a key factor in the dynamics of human societies, addressing questions such as how and why those changes took place in earlier populations, and how people were able to survive and expand based on their technological traditions, innovations and novelties.

Interpreting artefact variability in the Pleistocene archaeological record has long been one of the most debated topics, mainly related to different types of raw materials and their possible use by past humans. Over the last decades, paleoanthropological research has focused on diverse aspects of prehistoric tool-related behaviours of past humans, such as the procurement of raw materials, diversification of manufacturing techniques, the manipulation of physical

properties (e.g., heat treatment), and actual tool use. In fact, to what uses humans put their tools and how these might have varied through time and space is one of the key areas of research for understanding the evolution of Human Behaviour. The very presence of diverse materials in artefacts assemblages shows that humans managed different resources and, therefore, technology was characterized by the production of different tools made from materials with different properties, such as organic hard animal materials (e.g. bone, antler) but also non-organic, such as rocks transformed into stone tools.

Traceology is of major importance, being an important discipline that can determine and understand artefact use and thus can address fundamental questions about the evolution of Human Behaviour. Therefore, state-of-the-art functional studies in archaeology combine experiments and analysis of the archaeological artefacts through documentation and quantification of use-wear traces and residues.

This seminar studies the evolution of human technological behaviour from a functional perspective, focusing on tool function and use. The seminar is organized into three main topics: 1) theoretical background and framework of use-wear and residue analysis in archaeological research, 2) application of state-of-the-art methods and techniques, and 3) discussion of archaeological applications based on case studies (see syllabus for more details, section 4). Although the three main topics will be addressed during the theoretical lectures, the main focus of the theoretical part will be on the origins and role of use-wear studies in the history of archaeology theory framework (see the course readings, section 6). The development of methods and techniques, training, and their application to the archaeological record will be addressed via a detailed discussion of case studies, practical labs, and tutorial classes.

This summer school is targeted at participants without prior experience in use-wear analysis or experimental archaeology. More advanced concepts and topics for experienced users will be addressed in another workshop/summer school.

## **2. Institute and lecturers**

The Laboratory for Traceology and Controlled Experiments (TraCEr), in the MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution, part of the Leibniz-Zentrum für Archäologie (LEIZA), will host this summer school. All lecturers are working in, or affiliated to, the lab.

For further information, see:

<https://monrepos.leiza.de/en/tracer/>

<https://www.leiza.de/forschung/infrastrukturen/labore/tracer>

## **3. Aims, objectives and learning outcomes**

On successful completion of this course, participants should exhibit a comprehensive theoretical and practical knowledge on use-wear and residue analysis in Archaeology. Participants should be able to understand the main three topics of the discipline: its theoretical framework, its

methods and techniques, and its application to the archaeological record. It is also expected that participants will be able to read critically scientific publications, identify functional studies (e.g. methods), and integrate it into the state-of-the-art theoretical framework of the studies of the evolution of Human Behaviour.

#### **4. Course contents, workload and schedule**

*T – Theory / P – Practice in 4 groups of 5 participants*

##### **I. Introduction (T – 4h)**

1. Use-wear and residue analysis in archaeology (1h)
2. Imaging (1h)
3. Qualitative and quantitative use-wear analysis (2h)

##### **II. Sample preparation (P – 5h)**

1. Cleaning protocols
2. Coordinate system
3. Moulding
4. “Standard” samples

##### **III. Experimental organization & design (P – 5h)**

1. Industrial material tester: Inotec SMARTTESTER
2. Bow and arrow machine
3. Collaborative robotic arm: UR10e
4. Discussion

Goal: understanding the functionality and usage of the machines, and designing experiments

##### **IV. 2D use-wear analysis (P – 5h)**

1. Reflectance Transformation Imaging
2. Stereo-microscopes
3. Digital microscope
4. Reflected light microscope

Goal: observing different materials with different pieces of equipment (multi-scale approach)

##### **V. 3D use-wear analysis (P – 5h)**

1. 3D Scanner
2. Laser-scanning confocal microscope
3. Mountains

Goal: analysing use-wear in 3D and quantitatively

##### **VI. Introduction to data analysis and reproducible research (T – 1h)**

##### **VII. Final remarks and conclusions (T – 3h)**

Monday		Tuesday		Wednesday			Thursday		Friday
10:00-12:00	13:00-18:00	10:00-12:00	13:00-18:00	9:00-12:00 + 13:00-15:00	15:30-16:30	From 17:00	9:00-12:00 + 13:00-15:00	From 15:30	9:00-13:00
Section I.1-2 (T)	Practice 1	Section I.3 (T)	Practice 2	Practice 3	Guided tour through the museum	BBQ	Practice 4	Group work	Sections VI-VII (T)

## 5. Logistics

### Fees

- Course registration: 150€ (accommodation is not included)
- Registration fees include all materials for the seminar, lab consumables and coffee and snacks for breaks.
- Accommodation, breakfast, lunch and dinner are **not** included, except for the dinner on Wednesday (see schedule).
- Fees will have to be paid before 21<sup>st</sup> of March. Failure to pay the fees until that date will result in the cancellation of your participation. Fees will not be reimbursed after that date in case you cancel your participation.

•

### Admission requirements

- Bachelor's degree in Archaeology or associated fields. That is, Master, PhD students and Post-docs are welcome.
- The entire course is in English; fluency is required.
- All participants should bring a laptop.
- Max. 16 participants (for a maximum 4 groups of 4 participants during practical parts).

### Location and accommodation

We advise to look for AirBnb, Hostels or Hotels in the Neuwied or Koblenz regions (contact us if you have questions or issues finding accommodation). Car sharing will be organized with MONREPOS employees, as far as possible.

Note that a fully equipped kitchen (fridge, oven, ceramic hob, microwave, kettle, pots, pans...) is available in the castle for all participants during the duration of the workshop.

### Registration

Send your application to [tracer-monrepos@leiza.de](mailto:tracer-monrepos@leiza.de)

It must include (all in English):

- A cover letter (1 page max.), including a short description of your research interests, project and explaining why participating in this workshop will contribute to your ongoing or future research. Please also include the type of material you are working on (bone, lithics...), as well as the names of two referees.
- CV (1 page max.).
- Deadline: 21<sup>st</sup> of February

For any questions, please contact us via [tracer-monrepos@leiza.de](mailto:tracer-monrepos@leiza.de)

### **Applicant prizes**

- Two applicants will be able to stay in the Monrepos castle for free (only accommodation, no breakfast). Fees are still due.
- Decision will be made based on the CV and cover letter.

For any questions, please contact us via [tracer-monrepos@leiza.de](mailto:tracer-monrepos@leiza.de)

### **6. Course key bibliography**

- Hayden, B., 1979. Lithic use-wear analysis. New York: Academic Press.
- Keeley L., 1980. Experimental determination of stone tool uses: A microwear analysis. Chicago: University of Chicago Press.
- Marreiros, J., Gibaja, J., Bicho, N., 2015. Use-Wear and Residue Analysis in Archaeology, Springer, Manuals in Archaeological Method, Theory and Technique. Springer International Publishing.
- Rots, V. 2010. Prehension and hafting traces on flint tools: A methodology. Leuven: Leuven University Press.
- Semenov, S., 1964. Prehistoric technology: An experimental study of the oldest tools and artefacts from traces of manufacture and wear. London: Cory, Adams and Mackay.

All books are available in the MONREPOS library.