A COURSE SYLLABUS – DOCTORAL SCHOOL

REGARDING THE QUALIFICATION CYCLE FROM 2020TO 2024 AND FROM 2021 TO 2025

GENERAL INFORMATION ABOUT COURSE	
Course title	**Microarchaeology – on the border of archaeology and forensics. The importance of "invisible" information**
Name of the unit running the course	**University of Rzeszow, Institute of Archaeology**
Type of course *(obligatory, optional)*	optional
Year and semester of studies	II i III/ semester III I V
Discipline	archaeology
Language of Course	Polish
Name of Course coordinator	Dr hab. inż. Joanna Trąbska, Assistant Professor
Name of Course lecturer	Dr hab. inż. Joanna Trąbska, Assistant Professor
Prerequisites	no

BRIEF DESCRIPTION OF COURSE
(100-200 words)

Microtraces are becoming an increasingly important element of archaeological research. Due to their specificity they are related to forensic science in terms of the methods and interpretations used. The correct interpretation o the type of microtraces, their presence in a specific place, the specificity of sampling and the selection of research methods guarantee success in identifying human activities in the field of everyday life, technological processes and interaction with the environment. The aim of the lecture is to familiarize the participants with the research methodology and with the physical and chemical characteristics of individual groups of the most common micro-monuments.

COURSE LEARNING OUTCOMES AND METHODS OF EVALUATING LEARNING OUTCOMES

Learning outcome	The description of the learning outcome defined for the course	Relation to the degree programme outcomes (symbol)	Learning Format (Lectures, classes,...)	Method of assessment of learning outcomes (e.g. test, oral exam, written exam, project,...)
Knowledge (no.)	**(Knows and understands)**			
1	Knowledge mastered to the extent enabling the revision of existing paradigms. Knowledge of a global achievement, including theoretical foundations and general issues and selected specific issues – specific to archaeology	P8S-WG/1	Lecture, Classe	Oral exa
2	Main development trends in the aspect of microtrace research, including forensics, for the needs of archaeology	P8S-WG/2	Lecture, Classe	Oral exa
3	Methodology of scientific research	P8S-WG/3	Lecture, Classe	Oral exa
Skills (no.)	**(Able to)**			
1	Student uses knowledge from various fields of science, support-ing or potentially supporting ar-chaeology, to	P8S-UW/1	Lecture, Classe	Oral exam

	creatively identify and innovatively solve complex problems or perform research tasks, in particular: - define the purpose and subject of scientific research, formulate a research hypothesis, - develop methods, techniques, research tools and use them crea-tively, - draw conclusions based on sci-entific research			
2	Student can make a critical analy-sis and evaluation of research re-sults	P8S-UW/2	Lecture, Classe	Oral exam
3	Student can initiate a debate	P8S-UK/3	Lecture, Classe	Discussion during classes
4	Student can participate in scien-tific discourse	P8S-UK/4 P8S-UK/1 P8S-UK/5	Lecture, Classe	Discussion during classes
5	Student can disseminate the re-sults of scientific activity	P8S-UK/2	Lecture, Classe	Discussion during classes
Social competence (no.)	(Ready to)			
1	Student recognizes the im-portance of knowledge in solving cognitive and practical problems	P8S-KK/3	Lecture, Classe	Discussion during classes Oral exam
2	Student can critically evaluate scientific research	P8S-KK/1	Lecture, Classe	Discussion during classes Oral exam
3	Student can initiate activities in the public interest	P8S-KO/2	Lecture, Classe	Discussion during classes Oral exam

LEARNING FORMAT – NUMBER OF HOURS

Semester (no.)	Lectures	Seminars	Lab classes	Internships	others	ECTS
III I V	5	10	–	–	–	0

METHODS OF INSTRUCTION

Lecture, lecture with the use of presentations, analysis and discussion of cases, preparation of microscopic preparations by Students, analysis of results of spectroscopic and microscopic (SEM images and EDS spectra) analyses

COURSE CONTENT

1. Types of microtraces (mineral, inorganic, organic, geochemical). Environments of occurrence of micro-traces conducive to their preservation (mechanical and chemical aspects). Corrosion/weathering changes of micro traces.
2. Microtraces research methods. Discussion of research methods. Visit to the National Synchrotron Radiation Center in Krakow.
3. Analysis of individual groups of microtraces: theoretical and practical. Hair, bristles, fibers (organic and mineral). Archaeological and forensic context. Microscopic observations of patterns and hair from the context of contemporary archaeology.
4. Analysis of individual groups of microtraces: theoretical and practical. Mineral microremains (rock crumbs, pigments, glasses and glazes, ceramic dust, sinters and slags). Microscopic observations of thin plates. Independent preparation of powder preparations.
5. Analysis of individual groups of microtraces: theoretical and practical. Mineral microremains (rock crumbs, pigments, glasses and glazes, ceramic dust, sinters and slags). Microscopic observations of thin plates.

Independent preparation of powder preparations.
6. Analysis of individual groups of microtraces: theoretical and practical. Mineral microremains (rock crumbs, pigments, glasses and glazes, ceramic dust, sinters and slags). Microscopic observations of thin plates. Independent preparation of powder preparations.
7. Analysis of individual groups of microtraces: theoretical and practical. Organic microremains - resins, waxes, dyes, narcotic substances and toxins, plants that accumulate heavy metals.
8. Analysis of individual groups of microtraces: theoretical and practical. Geochemical microtraces. Geochemical background, scattering halos. Examples (trace elements, isotopes)

COURSE ASSESSMENT CRITERIA

LECTURES - CLASSES

VERY GOOD - ACTIVITY IN CLASSES, THE ABILITY OF INDICATING RESEARCH METHODS, THE ABILITY OF INTERPRETING TEST RESULTS, KNOWLEDGE OF ALL GROUPS OF SUBSTANCES THAT ARE MICROTRACTS, KNOWLEDGE OF THEIR ENVIRONMENTS, KNOWLEDGE OF SUBSTANCES IDENTIFIED BY DEGRADATION.

GOOD PLUS - ACTIVITY IN CLASSES, THE ABILITY OF INDICATING RESEARCH METHODS, THE ABILITY OF INTERPRETING TEST RESULTS, KNOWLEDGE OF MOST GROUPS OF SUBSTANCES THAT ARE MICROTRACTS, KNOWLEDGE OF THEIR ENVIRONMENTS, KNOWLEDGE OF THE IDENTITY OF THE SUBSTANCES AND THE IDENTIFICATION OF THE SUBSTANCES RESULTING FROM DEGRADATION.

GOOD - ACTIVITY IN CLASSES, THE ABILITY OF INDICATING RESEARCH METHODS, THE ABILITY OF INTERPRETING RESEARCH RESULTS, KNOWLEDGE OF SOME GROUPS OF SUBSTANCES THAT ARE MICROTRACTS, KNOWLEDGE OF THEIR ENVIRONMENTS, KNOWLEDGE OF THE SUBSTANCES FORMING AS A RESULT OF THE IDENTITY AND DEGRADATION OF MICROTRACTS.

SUFFICIENT - PRESENCE AT CLASSES

TOTAL PhD STUDENT WORKLOAD REQUIRED TO ACHIEVE THE INTENDED LEARNING OUTCOMES – NUMBER OF HOURS AND ECTS CREDITS

Activity	Number of hours
Scheduled course contact hours	15
Other contact hours involving the teacher (consultation hours, examinations)	2
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	10
Total number of hours	**27**
Total number of ECTS credits	0

INSTRUCTIONAL MATERIALS

Compulsory literature:	Janina Zięba-Palus et al. [red.] 2015 Mikroślady i ich znaczenie w postępowaniu przygotowawczym i sądowym, Kraków Paweł Kościelniak, et al. [red.] 2022 Analityka sądowa, Warszawa Bogusław Wiłkomirski. 2015 Toksyczny świat. Zarys historii trucizn, Kielce Stephen Weiner. 2010 Microarchaeology. Beyond the Visible Archaeological Record, Cambridge Eastaugh N., Walsh V., Tracey C., Siddall R. 2008. Pigment Compendium, London Kurzawska A., Sobkowiak-Tabaka I. [red.] 2021 Mikroprzeszłość. Badania specjalistyczne w archeologii, Poznań Włodarczyk B., 2006. Kryminalistyczne badania włosów ludzkich przy użyciu skaningowego mikroskopu elektronowego (SEM). Szczytno Artykuły z czasopism: Archaeometry, J. of Archaeological Science, J. of Forensic Science i

	innych z zakresu podobnej problematyki
Complementary literature:	J. Trąbska, 2021. Barwny świat pigmentów mineralnych od prehistorii do wieku XVIII, Kraków Schnidt-Przewoźna K., 2020. Barwienie metodami naturalnymi. Rośliny barwierskie i ich potencjał, Poznań Dowolny podręcznik z zakresu Geochemii