科目ナンバリング	U-LAS70 10002 SE50						
授業科目名<英訳>	ILAS Seminar-E2 :Chemistry in Art（芸術における化学） ILAS Seminar-E2 :Chemistry in Art			担当者所属職名・氏名	化学研究所　講師　PINCELLA, Francesca		
群	少人数群	単位数	2単位	週コマ数	1コマ	授業形態	ゼミナール（対面授業科目）
開講年度・開講期	2026・前期	受講定員(1回生定員)	18 (10) 人	配当学年	主として1回生	対象学生	全学向
曜時限	金5	教室	4共25			使用言語	英語
キーワード	analytical chemistry / art / pigments / color / conservation						

[授業の概要・目的]

This interdisciplinary course is intended to provide both science and non-science majors with a basic understanding of the chemistry (and physics) behind artworks and art materials. Scientific techniques applied to art conservation and restoration will also be introduced.
This course will explore the chemistry of colors (pigments and dyes), ceramics, glass, lacquers, and metals. The basic scientific principles and theories behind each topic will also be introduced. Several examples from Eastern and Western art will be discussed in class.

[到達目標]

In this course students will familiarize themselves with the materials and scientific methods behind the preparation and restoration of artworks. The students will learn the basic physics and chemical concepts necessary to understand the different topics introduced in class. The students will also be encouraged to reflect on the truly interdisciplinary nature of art conservation, and appreciate the importance of multidisciplinary approaches for problem solving.

[授業計画と内容]

The course consists of 12 lessons in class, a museum visit (equivalent to 2 classes), exam, and a feedback class.
The content of the course:
1. What is the role of science in art history and art conservation?
2-3. Chemistry and physics of color: pigments, dyes and inks (2 weeks)
4-5. Chemistry of ceramics, glasses and glazes (2 weeks)
6. Chemistry of gemstones and minerals
7. Chemistry of metals and alloys
8-9. Museum visit (equivalent to 2 classes)
10. Chemistry of oils and binders
11-12. Chemistry of wood, lacquer, paper and textiles (2 weeks)
13-14. Heritage science and scientific techniques for art conservation, restoration, authentication and archeology (2 weeks)
15. Exam (presentation)
16. Feedback

All lessons will include an introduction of the basic principles of chemistry and physics behind the topic, and examples from Western or Eastern art.

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[履修要件]

特になし

[成績評価の方法・観点]

Evaluation will be based on attendance and active class participation (30%), individual and group assignments (30%), and final oral presentation (40%).

[教科書]

使用しない

[参考書等]

（参考書）

A. Mark Pollard, Carl Heron, Ruth Ann Armitage 『Archeological chemistry』（Royal Society of Chemistry, 2017）ISBN:978-1782624264

Paul Garside, Emma Richardson 『Conservation Science: heritage materials』（Royal Society of Chemistry, 2021）ISBN:978-1788010931

Robert Christie 『Colour Chemistry』（Royal Society of Chemistry, 2014）ISBN:978-1849733281

Mary Virginia Orna 『The chemical history of color』（Springer, 2012）ISBN:978-3642326417

Beatrix Von Rague ’ 『A history of Japanese Lacquerwork』（Heritage, 1976）ISBN:978-1487572730

[授業外学修（予習・復習）等]

Students are encouraged to revise the class material regularly and submit assignments on time. Students shall actively contribute to the group work. Furthermore, students shall research the chosen topic for the final project report, with regular feedback from the instructor, taking advantage of the material recommended in class.

[その他（オフィスアワー等）]

Office hours: online or in person meetings with the instructor can be requested (appointment by email or on LMS).

For the museum visit, students are responsible for the transport and ticket expenses. The estimated entrance fee to the museum is 800 yen.

Students who decide to take part to the museum visit should be insured with the insurance for study and research “ Personal Accident Insurance for Students Pursuing Education & Research ”(学生教育研究災害傷害保険)

[主要授業科目（学部・学科名）]