

Course number	U-LAS70 10002 SE50				
Course title (and course title in English)	ILAS Seminar-E2 :Chemistry in Art (芸術における化学) ILAS Seminar-E2 :Chemistry in Art	Instructor's name, job title, and department of affiliation	Institute for Chemical Research Senior Lecturer,PINCELLA , Francesca		
Group	Seminars in Liberal Arts and Sciences	Number of credits	2	Number of weekly time blocks	1
Class style	seminar (Face-to-face course)	Year/semesters	2025 ・ First semester	Quota (Freshman)	15 (8)
Target year	Mainly 1st year students	Eligible students	For all majors	Days and periods	Fri.5
Classroom	25, Yoshida-South Campus Bldg. No. 4			Language of instruction	English
Keyword	analytical chemistry / art / pigments / color / conservation				
[Overview and purpose of the course]					
<p>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.</p> <p>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.</p>					
[Course objectives]					
<p>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.</p>					
[Course schedule and contents]					
<p>The course consists of 12 lessons in class, a museum visit (equivalent to 2 classes), exam, and a feedback class.</p> <p>The content of the course:</p> <ol style="list-style-type: none"> 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 					
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All lessons will include an introduction of the basic principles of chemistry and physics behind the topic, and examples from Western or Eastern art.

[Course requirements]

None

[Evaluation methods and policy]

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

[Textbooks]

Not used

[References, etc.]

(References, etc.)

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

[Study outside of class (preparation and review)]

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.

[Other information (office hours, etc.)]

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

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)

[Essential courses]