

CHEM 100: Light at the Museum – the Science and Art of Conservation Fall 2018

Instructor: Prof. Kristin Wustholz, ISC 2041, 757-221-2675, kwustholz@wm.edu (email is the best way to contact me)

Office Hours: Wednesdays 3 – 4 pm and by appointment

Class Meetings: MWF 2 – 2:50 pm, ISC 2280, we will occasionally meet in a different location (Swem Library, Dewitt Wallace Decorative Arts Museum and Collections and Conservation Building)



Course Description

“Every day, the vision of artists, the identity of peoples, and the very existence of history all threaten to disappear. Left alone, old buildings will crumble. The Declaration of Independence will disintegrate. The photographed faces of battle-weary Civil War soldiers will fade away... “

– American Institute of Conservation

By melding science with art, conservation professionals protect and preserve the physical artifacts of our cultural heritage. How are science and art used to slow or prevent deterioration? What can science tell us about art? What can art tell us about science? How does experimentation lead to knowledge and innovation in both the scientific and artistic domains? We will examine these questions by investigating the materials and technology used in creating and conserving art. You will engage in the course material through reading, writing, and meeting with guest speakers, hands-on experimentation, delivering presentations, as well as visits to museums and conservation labs. In this COLL 100 course, you will be challenged to think rigorously, and to develop communication skills beyond the written word. Over the course of the semester you will build the knowledge and skills necessary to create a presentation to the class on a museum object. In this presentation, you will analyze the results of a technical examination and their bearing on the artwork itself as well as describe how the artwork informs science. Class meetings will be a mixture of discussion, lecture, in-class activities, communication workshops, trips, and student presentations.

This course has two broad goals:

- To introduce you to the field of painting conservation and the ways in which experimentation (in both the artistic and scientific sense) can lead to innovation.
- To provide opportunities for you to collaborate with peers on assignments and projects that model real-world practice in the museum setting, with an emphasis on non-written communication.

Learning Objectives

After completing this course – as an active partner in the learning, communicating, and creating process – you will be able to:

- Describe the materials that are used to create easel paintings.
- Understand and explain the light-matter interactions that are important in the creation, visualization, and deterioration of paintings.

- Demonstrate, discuss, and assess the scientific methods that are used by conservation professionals to study paintings.
- Examine and explain the ways in which artistic experimentation leads to scientific innovation.
- Locate and evaluate sources for your conservation research project.
- Apply your knowledge of artists' materials and modern scientific techniques to examine a current problem in painting conservation.
- Create and deliver presentations that communicate effectively your knowledge of conservation and how science and art are used together to examine a painting.

Required Reading

The required text for this course is: Kirsch, A.; Levenson, R. *Seeing through Paintings: Physical Examination in Art Historical Studies*; Yale University Press: New Haven, 2002. Additional reading assignments will be posted on Blackboard and will come from the following sources:

- Shlain, L.; *Art & Physics: Parallel Visions in Space, Time, and Light*; HarperCollins Publishers: New York, 1991.
- Ball, P.; *Bright Earth: Art and the Invention of Color*; University of Chicago Press: Chicago, 2001.
- Mills, J.; White, R.; *Organic Chemistry of Museum Objects*; Butterworth-Heinemann Series: New York, 2011.
- Journal articles from the *National Gallery Technical Bulletin*

Assessment

Research Project (50%): The main assignment in this course is a semester-long research project where you will build the knowledge and skills necessary to create a presentation to the class on a museum object. In this final presentation you will explain, interpret, and analyze the results of a technical examination and their bearing on the artwork itself (e.g., historical significance, attribution). Research presentations will also describe how this particular museum object (e.g., the materials and methods used in its creation or conservation) has led to new knowledge in science. Project milestones are set up throughout the semester to help you understand your topic as well as build the skills necessary to communicate your findings to the class. These milestones include both individual and group assignments as follows:

- Encyclopedia vs. Wikipedia: This information literacy assignment is a short summary on a specific painting material of your choosing. (20 pts)
- Presentation 1 (A Material): Individuals will deliver a 1–2 min. presentation (1 slide) on the painting material. (20 pts)
- Choose a Painting: Investigate a painting that interests you during a research workshop at Swem Library. Submit a written rationale of your choice (~ 1 page) that explains why you are drawn to the painting and includes an annotated bibliography of the key source you plan to use. (20 pts)
- Create and Revise a Slide: Individuals will create draft slides for their second presentation and groups will review and revise the slides during a presentation workshop. (20 pts)
- Presentation 2 (A Painting): Working with a small group, deliver a 5–7 min. presentation (2-3 slides) summarizing a scholarly article on a technical examination of a painting of your choosing. Presentations should focus on *one aspect* of the technical examination. (40 pts)

- Complete Annotated Bibliography: In preparation for the final presentation, individuals will submit an annotated bibliography of three scholarly articles from the literature on a specific painting. (60 pts)
- Peer Review: Each student will critically evaluate a final presentation. Peer reviews are due at the end of class on the day of the workshop. (20 pts)
- Final Presentation (Full Technical Examination of a Painting): Working with a small group, create and deliver a ~15 minute presentation (5-7 slides) that explains, interprets, and analyzes the results of a technical examination of a painting and their bearing on the artwork itself. Presentations will also examine and explain how one aspect of the artwork (e.g., a painting material, method, or style) has led to scientific innovation. (80 pts)

We will begin the series of presentation assignments by viewing online presentation resources and discussing the features of a high-quality presentation. Teams of students will use workshops to develop presentation skills (e.g., volume, pace, eye contact, etc.) and then work toward slide design and story development using Jean-Luc Doumont's online resources. As a class, we will use group observations to develop a rubric that will guide the creation and evaluation of the presentations. Detailed information about the individual components of the research project including general instructions, grading criteria, and opportunities for revision will be distributed and discussed in class.

Quizzes (10% each): Two quizzes will assess your understanding of the scientific concepts presented in the class and conservation lab settings. Quizzes are open note (including in-class exercises and printed handouts), but using additional resources (e.g., books, the internet, other students, publications, etc.) is not permitted. Content from the research project presentations will be included on the second quiz. There are no exams in this class.

Homework (15%): Several homework assignments that assist your preparation for class discussion, quizzes, and your visits to Swem Library, the DeWitt Wallace Decorative Arts Museum, and Colonial Williamsburg's painting conservation laboratories will be given throughout the semester. Please note that due dates for these shorter homework assignments are not included on the syllabus – they will be discussed in class and posted to Blackboard in advance.

Participation (15%): Your engagement during class and visits is expected. Full participation includes coming to class prepared, asking and answering questions, sharing in discussion, collaborating and communicating effectively with your peers, completing in-class exercises, and delivering presentations.

Grades

Grading criteria for each element of the research project will be discussed and posted on Blackboard in advance of the assignment deadline. In some cases, we will discuss and establish specific grading criteria as a group. In general, grades will be established with the following considerations:

- A = Excellent performance and mastery of the material
- B = Very good understanding of the material
- C = Adequate performance
- D = Poor performance
- F = Unsatisfactory performance

Class Climate

This course is designed to give you an opportunity to explore topics in art conservation through instruction, discussion, and collaboration. Together we will create and maintain an atmosphere of mutual respect in which everyone's ideas can be heard. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. I will gladly honor your request to address you by an alternate name or gender pronoun.

Classroom Technology Policy

Every one of you contributes to the learning environment of this class through your presence, your questions and discussion points, and the energy you bring to the room. Technology can enhance the learning environment when you use it to seek additional information or document an activity. However, technology can also distract you and those around you to the point that it destroys our carefully crafted learning environment. Accordingly, the use of laptops, tablets, and phones for texting, social media, email, and web browsing unrelated to class is prohibited. The use of laptops for note taking is strongly discouraged. Inappropriate use of technology will result in a substantial reduction in your participation and/or final grade.

Policies

Late submission of materials is typically not permitted. Two class absences for any reason are excused without penalty, but to pass the class, your attendance at the presentations (individual, group, practice, and final) is mandatory. Additional unexcused class absences will lead to a grade-letter reduction in your participation and/or final grade. Any exceptions to these policies will be at the instructor's discretion in consultation with the Dean of Students Office (757-221-2510, deanofstudents@wm.edu).

Honor Code

The student Honor Code is an important part of what makes William & Mary a special community. I expect you to observe the Honor Code fully and faithfully.

Writing Resource Center

The Writing Resources Center, located on the first floor of Swem Library, is a free service provided to William & Mary students. Trained consultants offer individual assistance with writing, presentation, and other communication assignments across disciplines and at any stage, from generating ideas to polishing a final product. Students are encouraged to make use of this free resource. To make an appointment, visit: www.wm.edu/wrc.

Student Accessibility Services

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2509 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please see www.wm.edu/sas.

Approximate Course Schedule*

Week of	Topics	Reading	Key Dates & Activities
8/29	Conservation: Where Art & Science Meet	Kirsch & Levenson, Chpt. 1	8/31: Visit Special Collections at Swem Library
9/3	The Support & X-Radiography	Shlain, Chpt. 1; Kirsch & Levenson, Chpt. 2 (pp. 5-44)	9/7: Add/drop deadline 9/7: Information literacy workshop at Swem Library for Presentation 1
9/10	The Ground & Imaging	Kirsch & Levenson, Chpt. 3 (pp. 69-100)	9/10: Wikipedia assignment due 9/12: Visit to Dewitt Wallace Decorative Arts Museum 9/14: Presentation 1 workshop
9/17	The Paint Layer: Color	Shlain, Chpt. 26	9/17–9/19: Presentation 1 9/21: Color Matching Activity
9/24	The Paint Layer: Pigments	Kirsch & Levenson, Chpt. 4 (pp. 101-144); Mills & White, Chpt. 10	9/26: Research workshop at Swem Library for Presentation 2
10/1	The Paint Layer: Plucking the Rainbow	Ball, Chpt. 2	10/3: Choose a painting assignment due
10/8	Examination of The Paint Layer	<i>Analytical Chemistry</i> article	10/10: Quiz 1 10/12: Presentation 2 workshop
10/15	Examination of The Paint Layer	<i>National Gallery Technical Bulletin</i> article	10/15: Fall break 10/17: Visit to conservation lab 10/19: Create and revise a slide assignment due

10/22	Presentation 2		10/26: Withdrawal deadline 10/26: Evaluation and revision workshop
10/29	The Varnish & Time as Painter	Kirsch & Levenson, Chpt. 5; Ball, Chpt. 11	11/2: Annotated bibliography due 11/2: Final presentation workshop (content)
11/5	Cézanne's Card Players	Shlain, Chpt. 21; <i>Nat. Gall. Tech. Bull.</i> article	11/9: Final presentation workshop (storyboard)
11/12	Beyond Paintings	Kirsch & Levenson, Chpt. 6	11/16: Final presentation workshop (slides and transitions)
11/19	Practice Presentations in ISC 1291, 2291, 3291		11/19: Final presentation workshop (peer review due) 11/21 –11/23: Thanksgiving break
11/26	Final Presentations		
12/3	Course Evaluation & Reflection		12/3: Quiz 2 12/7: Visit to DeWitt Wallace Decorative Arts Museum

**Any changes to this course schedule will be announced in class and posted to Blackboard. Due dates for shorter homework assignments are not included – they will be announced in advance.*

***A field trip to the painting conservation lab at Colonial Williamsburg is set for Wednesday, October 17. Transportation to/from the lab will be coordinated in class.*

Additional Resources

Research Guide for Light at the Museum

<https://guides.libraries.wm.edu/lightatthemuseum>

OSC: *Open Stax Chemistry*, by Flowers, Theopold, and Langley

<https://openstax.org/details/books/chemistry>

OSP: *Open Stax College Physics*, by Urone and Hinrichs

<https://openstax.org/details/books/college-physics>