

ARTC 668 – Spring 2020

Inorganic Materials Conservation Block

Syllabus and Related Course Details

Introduction

The purpose of this document is to provide details about the goals, content, and assessment of the Spring 2020 Inorganic Materials Conservation Block. Its primary contents include a list of teaching staff, a detailed schedule with readings, and all relevant information on course requirements, assignments, and assessment. This document is constantly evolving, and constructive comments are welcome.

Block Goals and Objectives

The main objective of the Inorganic Materials Conservation Block is to introduce aspects of the technology, manufacture, societal impact, composition, degradation, and conservation of objects made of the following inorganic materials: glass, ceramic, and metal. While the theoretical aspects of these topics will be shared through various lectures, demonstrations, and field trips, students will also apply this information in practical hands-on activities. These practicums will mostly relate to basic conservation techniques of inorganic materials.

During this block, the content of the coinciding lectures for ARTC 616 and ARTC 671, taught by WUDPAC faculty and visiting experts, will be synchronized as best as possible with the block material being presented.

By the end of the block, students will be able to:

- recognize common methods of manufacture for glass, ceramic, and metal objects;
- have a basic understanding of the historical, geographic, and societal trends of glass, ceramic, and metal manufacture and recognize its human impact;
- demonstrate familiarity with common examination techniques used to study, document, and assess the condition of glass, ceramic, and metal objects;
- explain the primary causes of deterioration for glass, ceramic, and metal objects;
- convey and prioritize specific preservation needs for glass, ceramic, and metal objects, including ideal environmental parameters, proper storage conditions, and methods for handling;
- cite, and in some cases apply, common treatment techniques, materials, and decision-making processes for the care of glass, ceramic, and metal objects.

General Schedule and Attendance

The block begins on Monday, February 24, and concludes on Friday, March 20, 2020.

Teaching will take place mostly on Mondays, Wednesdays, and Fridays, with morning sessions generally from 9:30am to 12:00pm, and afternoon sessions from 1:30pm to 5:00pm. Tuesday and Thursday afternoons alternate between topics on documentation techniques and block time, with every other Thursday afternoon reserved as free time for students.

Unless otherwise indicated, all classes are held in the Student Classroom on the third floor of the Research Building at Winterthur Museum. Attendance and punctuality are required. However, if you need to miss class due to illness or other emergency, please know that you can. Never feel pressured to come to class if you are sick. Simply be sure to clearly communicate your need to miss class directly with the instructor ahead of time.

Because this block occurs during February and March, we may experience inclement weather that will require shifting of the schedule and flexibility by everyone involved.

Teaching Staff: ARTC 667 Inorganics

Lauren Fair

WUDPAC Affiliated Assistant Faculty and Winterthur Objects Conservator

Lead instructor for the Inorganic Block

lfair@winterthur.org

w (302) 888-4895

m (717) 856-8312

Guest lecturers

Emily Brown

Conservator of Sculpture and Decorative Arts, The Ringling
emily.brown@ringling.org

Leslie Grigsby

Winterthur Senior Curator of Ceramics & Glass
lgrigsby@winterthur.org

Adam Jenkins

Objects Conservator, Adam Jenkins Conservation Services, LLC
spalted@hotmail.com

Kate Cuffari

Associate Conservator of Decorative Arts and Sculpture, Philadelphia Museum of Art
kcuffari@philamuseum.org

Ann Wagner

Winterthur Curator of Decorative Arts
awagne@winterthur.org

Planned field trips

Wheaton Arts in Millville, NJ (1-hr-10-min drive), <http://www.wheatonarts.org/>

Laran Bronze Foundry in Chester, PA (28-min drive), <http://laranbronze.com/>

University of Pennsylvania Museum of Archaeology and Anthropology in Philadelphia, PA (43-min drive),
<https://www.penn.museum/>

The Philadelphia Museum of Art in Philadelphia, PA (47-min drive), <https://www.philamuseum.org/>

Teaching Staff: ARTC 671 and 616 Inorganics

Dr. Hannelore Roemich

Professor of Conservation Science, Institute of Fine Arts, New York University
hannelore.roemich@nyu.edu

Dr. Johanna Bernstein

Assistant Dean for International Programs, Director of Women in Energy Initiative, Rutgers University
johanna.bernstein@rutgers.edu

Matthew Cushman

WUDPAC Affiliated Assistant Faculty and Winterthur Paintings Conservator
mcushm@winterthur.org

Lauren Fair

WUDPAC Affiliated Assistant Faculty and Winterthur Objects Conservator
lfair@winterthur.org

Dr. Rosie Grayburn

WUDPAC Affiliated Assistant Faculty and Winterthur Associate Scientist
rgrayb@winterthur.org

Readings

There are required readings for select days of the block, listed in the syllabus. With the help of WUDPAC 2019 alumna Cassia Balogh, a larger Bibliography for inorganic objects conservation is also supplied as a reference. *Please note: the readings for ARTC 671 and 616 (science classes) are not listed in this syllabus; refer to the reading lists provided separately for these courses.

All required readings for the block will be provided digitally. For those articles that are directly provided to you, you are asked to respect copyright issues and not distribute any parts of these articles to others, while restricting your usage of these articles to matters related to this block and your own future conservation work.

A select number of key books will be pulled from the library and set aside on the reading shelf in the Student Lab. Please check this shelf before reserving books from the library, as it may have already been set aside for you.

Assignments and Grading

In addition to active participation in class discussions, there will be several assignments and practical exercises throughout the block. All assignments are designed to test proficiency in the examination and/or treatment of objects inorganic in nature, as well as to encourage creative thinking and problem solving. Time will be allotted for students to complete assignments and practicums under the supervision of the instructor in class, but students should also expect to set aside time to work independently outside of class.

Late assignments will be docked a letter grade for each day they are overdue, unless previous arrangements were made with the instructor.

Assignments

1. Each student will choose an object on the first day of class for which to complete a condition report and treatment proposal. The report should include description, fabrication technology, relevant historical information and cultural context, condition description, statement of significance, and proposal for treatment. A reference list should also be included. Report examples and guidelines will be provided. Reports are due by **5 pm on Friday, March 20**, sent via email as a Word document to lfair@winterthur.org.
 - *The documentation project is 40% of the Inorganic Block grade.*
2. Each student will pick an area of the world NOT discussed in one of the three history lectures given in class (glass Feb. 25, ceramics Mar. 2, or metals Mar. 11). They will present on this area to the class as it relates to one of the three topics via PowerPoint (five-minute presentation, Lightning Round style) on the second-to-last day of class, **March 19**.
 - *The history presentation will be 20% of the Inorganic Block grade.*
3. Each student is expected to actively participate in class discussions, group activities, and complete the assigned practicums. For each practicum, students are asked to take notes and submit those notes (lab notebook style) **by start of class Monday morning, March 16**. The practicum assignments include:
 - Glass assembly with epoxy
 - Ceramic assembly with Paraloid B72
 - Loss compensation on joined ceramic (filling and inpainting)
 - Cleaning tests on metal study pieces
 - *Class participation and submission of lab notebooks will be 30% of the Inorganic Block grade.*
4. In the second week of the block, each student will choose a kit of ceramic sherds for which they must identify the type of ceramic body. Each sherd is numbered, and students will review the answer key with the instructor **on or before March 6**.
 - *The sherd ID activity will be 10% of the Inorganic Block grade.*

Grading

The overall grade for the Inorganic Materials Conservation Block is calculated as described above. This grade will then represent 25% of the total grade for ARTC 655. This percentage is based on the number of days spent in the block during the Spring Semester.

Course Mindset

- Be curious and humble
- Embrace flexibility for the instructor and guest speakers' preferred method(s) of teaching; each comes with their own strengths and weakness, and all are eager to share their passion with you
- Be willing to learn something new, or to see something you thought you knew in a new light
- Listen
- Look
- Have fun

University Policies/Resources

Accommodations for disabilities

Any student who thinks they may need accommodation based on a disability should contact the Disability Support Service (DSS) office as soon as possible. The DSS office is located at 119 Alison Hall, 240 Academy Street, Phone: 302-831-4643, fax: 302-831-3261, website: www.udel.edu/DSS.

Academic honesty

Adhere to the University of Delaware's policies about academic honesty. Review these policies at <http://www.udel.edu/stuguide/08-09/code.html#honesty>. Please note especially the instructions about plagiarism and accurately attributing the words or ideas of others in your own work.

Counseling services

Services are available through the UD Center for Counseling & Student Development. Emergency 24/7 hotline: 302-831-1001. To schedule an appointment: 302-831-2141. You can speak to a counselor about career, academic, or personal concerns. Counselors respect racial, cultural, and sexual diversity and everything discussed is strictly confidential. The service is free to WUDPAC students with UD health insurance. UD psychiatric care is also available with a referral.

Title IX

Any student, faculty, or staff member with questions or concerns about the applicable University policies or who believes they have been the victim of sex discrimination, sexual harassment, sexual assault, dating/domestic violence is encouraged to contact the University's Title IX Coordinator:

Danica Meyers

Interim Director, Institutional Equity & Title IX Coordinator
305 Hullihen Hall
Newark, DE 19716
(302) 831-8063

Schedule

Monday, Feb. 24

- 9:30 am Introduction to the Inorganic Block
Examination of inorganic objects
- 1:30 pm Documentation of inorganic objects
Selection of documentation projects

Required reading:

- This syllabus
- Cutajar, Jan Dariusz, Abigail Duckor, Dean Sully, and L. Harald Fredheim. 2016. "A Significant Statement: New Outlooks on Treatment Documentation." In *Journal of the Institute of Conservation* 39:2, 81-97.

Handouts:

- Examination and Documentation of Inorganic Objects worksheet
- Condition Glossary
- Conservation Examination Report and Treatment Proposal – annotated template
- Inorganic Object Conservation Bibliography

Tuesday, Feb. 25

- 9:30 am History of glass manufacture (Emily Brown)
- 1:30 pm ARTC 616: Glass chemistry and degradation (Dr. Hannelore Roemich)

Required reading/viewing:

- Corning Museum of Glass. "Core Forming." <https://www.cmog.org/video/core-forming>. (3:18)
- Corning Museum of Glass. "Roman Mold-Blown Glass." <https://www.cmog.org/video/core-forming>. (6:17)
- Corning Museum of Glass. "Cameo Glass." <https://www.cmog.org/video/cameo-glass>. (5:27)
- Corning Museum of Glass. "Caned Beaker: Techniques of Venetian-Style Glassworking." <https://www.cmog.org/video/beaker-techniques-renaissance-venetian-style-glassworking>. (8:36)
- Corning Museum of Glass. "Winged Glass: Techniques of Venetian-Style Glassworking." <https://www.cmog.org/video/winged-glass-techniques-renaissance-venetian-style-glassworking>. (8:44)
- Peruse the following website: <https://www.glassatrisk.com/>
- Roemich, Hannelore. "Glass and Ceramics." In *Conservation Science: Heritage Materials*, edited by Eric May and Mark Jones, 160-184. Royal Society of Chemistry, 2006.

Handouts:

- Short History of Glass PowerPoint
- Glass Chemistry and Degradation PDF

Wednesday, Feb. 26

- 9 am Drive to Wheaton Arts
- 2 pm Leave Wheaton Arts
- 4 pm Student choice lecture: Alessandro Scola for Laura McNulty

Required reading:

- Explore the [Wheaton website](#) prior to the trip

- (It could also be fun to watch a few eps of [Blown Away](#) on Netflix, if you have this streaming service. Obviously, it's not required!)

Thursday, Feb. 27

9:30 am Technology and manufacture of ceramics

pm Free afternoon

Required reading/viewing:

- Rhodes, Daniel. 1973. *Clay and Glazes for the Potter*. Radnor: Chilton Book Company, 3-12; 81-84.
- Johns Hopkins Archaeological Museum. 2015. "Mysteries of the Kylix: Recreating Ancient Greek Ceramics." Vimeo, September 25, 2015. Available online: <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/recreating-ancient-greek-ceramics/film-mysteries-of-the-kylix/>.

Handouts:

- Technology and Manufacture of Ceramics PowerPoint

Friday, Feb. 28

9:30 am ARTC 671: Stone and clay chemistry (Dr. Johanna Bernstein)
See ARTC 671 reading list for any required readings for this lecture

1:30 pm Adhesives for glass and ceramics

4:30 pm ARTC Applied Science Professorship candidate lecture

Required reading:

- Koob, Stephen P. 2009. "Paraloid B-72®: 25 years of use as a consolidant and adhesive for ceramics and glass." In *Holding it All Together*, edited by J. Ambers, C. Higgitt, L. Harrison, and D. Saunders, 113-119. London: Archetype Publications Ltd.
- Riccardelli, Carolyn, George Wheeler, Christina Muir, George Scherer, and Joe Vocaturo. 2010. "An Examination of Pinning Materials for Marble Sculpture." In *AIC OSG PostPrints* (17): 95-112.

Handouts:

- Adhesives for Ceramics and Glass PowerPoint

Monday, Mar. 2

9 am World history of ceramics and ceramic body ID (with Leslie Grigsby)
Sherd ID kits

1:30 pm Deterioration of glass and ceramics/storage and preventive needs

Required reading:

- Kingery, W. D. and Vandiver, P. 1986. *Ceramic Masterpieces: art, structure, and technology*. New York: Free, Collier Macmillan, 7-18.
- Buys, Susan, and Victoria Oakley. 1993. "Wares." In *Conservation and Restoration of Ceramics*. Boston: Butterworth-Heinemann, 13-17.
- Buys, Susan, and Victoria Oakley. 1993. "The Deterioration of Ceramics." In *Conservation and Restoration of Ceramics*. Boston: Butterworth-Heinemann, 18-28.

Handouts:

- History and Body ID PowerPoint
- Ceramic Manufacture Timeline
- Flow of Ceramic History
- Deterioration of Glass and Ceramics PowerPoint

Tuesday, Mar. 3

- 9:30 am ARTC 616: Epoxy chemistry (Matt Cushman)
- 1 pm Photodocumentation of inorganic objects (Jim Schneck)
- 4:30 pm ARTC Applied Science Professorship candidate lecture

Required reading:

- Selwitz, Charles. 1992. *Epoxy Resins in Stone Conservation*. J. Paul Getty Trust.
- Tennent, Norman H. and Stephen P. Koob. 2010. "An Assessment of Polymers Used in Conservation at the Corning Museum of Glass." In *Glass and Ceramics Conservation 2010. Interim Meeting of the ICOM-CC Working Group, October 3-6, 2010, Corning, New York, USA*. Edited by Hannelore Roemich, 100-109. International Council of Museums.

Wednesday, Mar. 4

- 9:30 am Loss compensation of ceramics and glass
- 1:30 pm Loss compensation practicum
- 4 pm Student choice lecture: Linda Nieuwenhuizen for Kate Acuna

Handouts:

- Consolidation and Loss Compensation of Glass and Ceramics PowerPoint

Thursday, Mar. 5

- 9:30 am ARTC 671: Cleaning ceramics and glass: stain reduction and desalination of ceramics (Lauren Fair)
- 1:30 pm Team activity
Continue assembly/loss compensation practicum

Required reading:

- Pouliot, Bruno, Lauren Fair, and Richard Wolbers. 2013. "Re-thinking the Approach: Techniques Explored at Winterthur for the Stain Reduction of Ceramics." In *Recent Advances in Glass, Stained Glass, and Ceramics Conservation*. Preprints from the Interim Meeting of the ICOM-CC Glass and Ceramics Working Group, held in Amsterdam, October 7-10, 2013, edited by Hannelore Roemich and Kate van Lookeren Campagne, 211-224. ICOM Committee for Conservation.
- White, Chris, Marilen Pool, and Norine Carroll. 2010. "Short Communication: a Revised Method to Calculate Desalination Rates and Improve Data Resolution." In *JAIC* 49: 45-52.

Handouts:

- Cleaning Ceramics and Glass PowerPoint

Friday, Mar. 6

9:30 am Few slides on inpainting
Continue loss compensation practicum

1:30 pm Individual sherd ID kit review

Monday, Mar. 9

9:30 am Technology and manufacture of metal objects (Adam Jenkins and Kate Cuffari)

1:30 pm ARTC 616: Metal structures/phase diagrams/metallography (Dr. Rosie Grayburn)

Required reading:

- Selwyn, Lyndsie. 2004. "Metals." In *Metals and Corrosion: A Handbook for the Conservation Professional*, 5-15. Ottawa: Canadian Conservation Institute.
- Chapters 1-3 of: Scott, David. 1991. *Metallography and Microstructure of Ancient and Historic Metals*. Marina del Rey, CA: Getty Conservation Institute in association with Archetype Books.

Handouts:

- Technology and Manufacture of Metal Objects PowerPoint

Tuesday, Mar. 10

am, TBD Drive to Laran Bronze Foundry

11:30 am Return from Laran

1:30 pm Photodocumentation of inorganic objects (Jim)

Wednesday, Mar. 11

9:30 am World history of metals

1:30 pm Looking at metals in the Winterthur collection (with Ann Wagner)

Required reading:

- Reardon, A.C., ed. 2011. "Discovering Metals – A Historical Overview." In *Metallurgy for the Non-Metallurgist*, Second Edition, 73-84. ASM International.

Handouts:

- World History of Metals PowerPoint

Thursday, Mar. 12

9:30 am ARTC 671: Corrosion chemistry and introduction to electrochemistry (Rosie)

pm Free afternoon

Optional reading:

- Groysman, Alec. 2009. *Corrosion for Everybody*. Springer Science & Business Media.
- McCaffery, E. 2010. *Introduction to Corrosion Science*. Springer Science & Business Media.

Friday, Mar. 13

9:30 am Silver, copper, and iron

1:30 pm Metal cleaning practicum

Required reading:

Break up into three groups (to be determined in class prior)

Group one reads: (28 pages)

- Selwyn, Lyndsie S. 1990. "Historical Silver: Storage, Display, and Tarnish Removal." In *Journal of the International Institute for Conservation, Canadian Group* 15: 12-22.
- O'Connor, Ariel, et. al. 2015. "Silver or Gold? Surprising challenges in cleaning a 19th-century Persian water pipe." In *AIC Objects Specialty Group Postprints* 22: 151-168. Available online: <http://resources.conservation-us.org/osg-postprints/wp-content/uploads/sites/8/2015/05/osg022-10.pdf>.
- Grayburn, Rosie, Tia Polidori, and Katelyn Rovito. "Electroplated Quandaries: Treatment and Analytical Insights." Poster presented at 2018 AIC conference.

Group two reads: (30 pages)

- Scott, David. 2002. "Mechanical Cleaning," and "Chemical Cleaning Treatments." In *Copper and Bronze in Art: Corrosion, Colorants, Conservation*, 357-369. Los Angeles: The Getty Conservation Institute.
- Drayman-Weisser, Terry. 1994. "A Perspective on the History of Conservation of Archaeological Copper Alloys in the United States." *JAIC* 33 (2): 141-152.
- Rivers, Shayne, and Nick Umney. "Mechanical removal of corrosion products" and "Brass and bronze." In *Conservation of Furniture*, 680; 692-698. New York: Elsevier Butterworth-Heinemann, 2003.

Group three reads: (31 pages)

- Scott, David. A., and Gerhard Eggert. 2009. "Conservation of iron from the soil," "Conservation of exposed ironwork," "Conservation of iron from marine sites," and "Conservation and decision-making." In *Iron and steel in art: corrosion, colorants, conservation*, 131-162. London: Archetype Publications.

Monday, Mar. 16

9:30 am ARTC 616: Electrochemistry lab (Rosie)
*See ARTC 616 reading list for any required readings for this lecture

1:30 pm X-radiography of inorganic objects

Required reading (skim):

- Lang, Janet, and Andrew Middleton. 2005. *Radiography of Cultural Material*, 2nd edition. Burlington, MA: Elsevier Butterworth-Heinemann.

Tuesday, Mar. 17

9:30 am Drive to University of Pennsylvania Museum of Archaeology and Anthropology (Penn Museum)

12 pm Lunch at Penn Museum

1 pm Drive to Philadelphia Museum of Art

Required reading:

- Rozeik, Christina, Julie Dawson, and Lucy Wrapson. 2010. "Are Attic Vases 'Archaeological'?" In *Conservation and the Eastern Mediterranean, Contributions to the Istanbul Congress 20–24 September 2010*, 24-29. Edited by Christina Rozeik, Ashok Roy, and David Saunders. London: The International Institute for Conservation of Historic and Artistic Works.

Wednesday, Mar. 18

- 9:30 am Modern metals, treatments, and techniques (Adam)
- 1:30 pm Outdoor sculpture
- 4 pm Student choice lecture: Rebecca Kennedy for Maddie Cooper

Thursday, Mar. 19

- 9:30 am ARTC 671: Corrosion inhibitors and metal coatings (Rosie)
- 1:30 pm History presentations

Required reading:

- Watkinson, D. "4.43 Presentation of Metallic Cultural Heritage." In *Shreir's Corrosion*. Elsevier, 3307-3340.

Friday, Mar. 20

- 9:30 am Block debrief and informal sharing about doc projects over coffee
Open lab time
Lab cleanup
- 5 pm Documentation projects due by 5 pm

Thanks, everybody for a terrific Inorganic Block!