

**MUSEUM PREVENTIVE CONSERVATION I – PREVENTIVE CONSERVATION CONCEPTS**  
**Course Outline and Syllabus, Fall 2013**

**General Course Information**

Museum Preventive Conservation I  
3.0 credits

CRN 52878 AH 6286.80

CRN 51605 ANTH 6203.80

CRN 52251 MSTD 6203.80

**Dates and Times**

Thursdays 6:10pm–8:00pm

Classes begin 29 August 2013

Holiday 28 November 2013

Last class 05 December 2013

**Venue**

National Museum of Natural History, Smithsonian Institution, 10<sup>th</sup> and Constitution, Washington, DC.  
Students should assemble by 6:00pm in the Constitution Avenue lobby of the National Museum of Natural History. An escort will take you to the classroom as a single group. Please bring a photo ID in case the security guards request one. If you are unable to be present by 6:00 PM, please make arrangements with the instructors for someone to meet you in the lobby.

**Course Directors and Primary Instructors**

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**Required Reading Materials**

**Available from GW Bookstore; alternate sources given below**

Hatchfield, P. 2002. *Pollutants in the Museum Environment: Practical Strategies for Problem Solving in Design, Exhibition, and Storage*. Archetype Press, London. ISBN 1-873132-96-4

<http://www.archetype.co.uk/publication-details.php?id=64>

Landry, G. (ed.). 2000. *The Winterthur Guide to Caring for Your Collections*. Henry Francis DuPont Winterthur Museum, Inc., Winterthur, DE. ISBN 0-912724-52-8 <http://www.winterthurstore.com/product/410696/The-Winterthur-Guide-to-Caring-for-Your-Collection.html?cid=111>

Szcepanowska, H. 2013. *Conservation of Cultural Heritage: Key Principles and Approaches*. Routledge, New York. ISBN 978-0-415-67475-1 paperback <http://www.routledge.com/books/details/9780415674751/>

**Purchase directly from publisher/distributor; not available via GW Bookstore**

ASHRAE Chapter A-23 2011. *Applications Handbook, Chapter 23 Version 2011 Museums, Galleries, Archives, and Libraries*. Purchase PDF (in Inch-Pounds). Order from: [http://www.techstreet.com/cgi-bin/detail?product\\_id=1801490](http://www.techstreet.com/cgi-bin/detail?product_id=1801490)

Hawks, C., M. McCann, K. Makos, L. Goldberg, D. Hinkamp, D. Ertel, and P. Silence (eds). 2011. *Health & Safety for Museum Professionals*. AIC Health & Safety Committee and Society for the Preservation of Natural History Collections, New York, NY.

Order from: [http://www.universityproducts.com/cart.php?m=product\\_list&c=2097](http://www.universityproducts.com/cart.php?m=product_list&c=2097)

Warda, J. (ed.). 2011 *The AIC Guide to Digital Photography and Conservation Documentation*. 2<sup>nd</sup> ed. American Institute for Conservation, Washington, DC.

<http://www.conservationus.org/index.cfm?fuseaction=page.viewpage&pageid=1531>

**Available at no charge**

Ashley-Smith, J., A. Burmester, and M. Eibl (eds.). 2013. *Climate for Collections: Standards and Uncertainties*. Postprints of the Munich Climate Conference, 7 to 9 November 2012. Doerner Institut, Munich.

[http://www.doernerinstitut.de/downloads/Climate\\_for\\_Collections.pdf](http://www.doernerinstitut.de/downloads/Climate_for_Collections.pdf)

Grzywacz, C. 2006. *Monitoring for Gaseous Pollutants in Museum Environments*. Getty Conservation Institute, Los Angeles.

[http://www.getty.edu/conservation/publications\\_resources/pdf\\_publications/monitoring\\_gaseous.html](http://www.getty.edu/conservation/publications_resources/pdf_publications/monitoring_gaseous.html)

Strang, T. J. 2013 *Studies in Pest Control for Cultural Property*. University of Gothenburg, Gothenburg.

<https://gupea.ub.gu.se/handle/2077/31500> (download 3 pdfs for complete text).

**Additional readings (required and supplemental) are available on course readings CD. The CD will be distributed at the first session. YOUR CD MUST BE RETURNED AT THE END OF THE COURSE TO RECEIVE A FINAL GRADE**

**Supplies (required)**

Each student should **bring a small hand lens or optivisor (anything from 2-10x)** to all class sessions dealing with materials in collections and for the laboratory sessions. Each student should also **bring a pair of indirectly vented safety goggles** (see below for style; available at hardware stores) for each of the 2 laboratory sessions.



**Additional Resources (available at no charge)**

American Institute for Conservation – *Journal of the American Institute for Conservation* (electronic archive of articles) [www.conservation-us.org](http://www.conservation-us.org) click on Resource Center

CAMEO materials database – information on hundreds of materials found in museum collections

[http://cameo.mfa.org/wiki/Category:Materials\\_database](http://cameo.mfa.org/wiki/Category:Materials_database)

Canadian Conservation Institute – preservation and preventive conservation resources

<http://www.cci-icc.gc.ca/index-eng.aspx>

Canadian Museum of Nature, Conservation Section – images of the impact of agents of deterioration, the use of Blue Wool Standards, and information on their risk assessment programs

<http://www.nature.ca/en/research-collections/our-collections/collection-conservation>

Collections Trust – *CollectionsLink* website. Benchmarks in Collections Care; benchmarking documents for various kinds of collections and information on qualitative collections assessments

<http://www.collectionslink.org.uk/component/acesearch/search?query=benchmarks+in+collection+care+pdf>

Getty Conservation Institute – free publications on conservation and preservation, in pdf format

[http://www.getty.edu/conservation/publications/pdf\\_publications/](http://www.getty.edu/conservation/publications/pdf_publications/)

Heritage Preservation – information on conservation assessments, [www.heritagepreservation.org](http://www.heritagepreservation.org)

Institute of Conservation (ICON) – series on how to care for various objects

[http://www.icon.org.uk/index.php?option=com\\_content&task=view&id=9&Itemid=10](http://www.icon.org.uk/index.php?option=com_content&task=view&id=9&Itemid=10)

Image Permanence Institute – free download of the Preservation Calculator, other free publications on preservation of photographic material, information on the Photographic Activity Test

[www.imagepermanenceinstitute.org](http://www.imagepermanenceinstitute.org)

Library of Congress – product specifications for materials used in housing library and archive materials

<http://www.loc.gov/preservation/resources/specifications/index.html>

Museum Pests Network – information on pest ID and control [www.museumpests.net](http://www.museumpests.net)

National Archives and Records Administration, electronic publications on preservation

[www.archives.gov/preservation/](http://www.archives.gov/preservation/)

National Fish & Wildlife Service Forensic Laboratory – *Identification Guide for Ivory and Ivory Substitutes*.

<http://www.lab.fws.gov/ivory.php>

National Park Service – *Preservation Briefs* and other publications on preservation of historic structures

<http://www.nps.gov/tps/how-to-preserve/briefs.htm>

National Park Service – *Conserve-O-Grams* and *NPS Handbook* (3 vols)

[http://www.cr.nps.gov/museum/publications/conservoogram/cons\\_toc.html](http://www.cr.nps.gov/museum/publications/conservoogram/cons_toc.html)

Preserv'Art – review of products for use with collections and glossary of terms,

<http://preservart.ccg.mcccf.gouv.qc.ca/index.aspx>

Researching Ivory – links to a host of resources regarding ivory, <http://www.ebur.eu/index.php?q=1&s=0&t=1>  
Society for the Preservation of Natural History Collections – electronic archive of journal issues, many related to preventive conservation topics, click on ‘Publications’ and follow links [www.spnhc.com](http://www.spnhc.com)

### **Course Description**

*Examines* the history of preventive conservation in museums, the ethics that govern the conservation profession, and team approaches to collections care. *Introduces* interactions of materials and agents of deterioration that threaten collections, condition documentation, qualitative assessments, and when to consult a conservator and how to choose a conservator. *Presents* the literature and other resources available on preventive conservation.

### **Course Learning Objectives**

- Review the evolution of a preventive conservation approach for museums and historic preservation
- Explain ethics and guidelines for practice in the conservation profession
- Compare differing approaches to conservation in various specialty fields and cultures
- Recognize issues related to cultural sensitivity of collection objects
- Recognize the scientific and conservation terms used in preventive conservation and know their meaning
- Safely handle cultural property
- Document the condition of museum objects in written and photographic form
- Describe agents of deterioration (fire, water, physical forces, pests, contaminants, light and ultraviolet radiation, incorrect temperature, incorrect relative humidity, displacers and vandals, and neglect) that act on cultural property and the types of risk that may be posed by each one
- Describe mechanisms by which environmental agents of deterioration damage cultural property
- Identify materials that comprise cultural property, describe technologies used to create cultural property from these materials, and assess the effects of various agents of deterioration on these materials
- Evaluate physical and chemical properties of materials commonly used to store and display collections
- Compile and analyze information about materials that might be used to store and display collections, implement uncomplicated tests to screen these materials, and determine when in this process to consult a conservator
- Understand a qualitative assessment approach to collection care
- Recognize when to call a conservator and how to select an appropriate conservator.

### **Code of Academic Integrity**

All students who take the course are expected to comply with the George Washington University Code of Academic Integrity in completing assignments and examinations. A copy of the Code is available at <http://www.gwu.edu/~ntegrity/code.html>

### **Accommodation for Religiously Observant Students**

In keeping with University policy, students are to notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. These students will be permitted to be absent without penalty on such occasions, including permission to make-up examinations. The full policy is available at: <http://registrar.gwu.edu/university-policies>

### **Accommodation for Disabilities**

In accordance with the Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act, and other applicable federal, state, and local laws, and as articulated in the University’s Equal Opportunity Statement, the University does not discriminate against any qualified individuals with a disability. For additional information for students, or to request a reasonable accommodation on the basis of disability, please refer to the Disability Support Services (DSS) website at <http://gwired.gwu.edu/dss/Welcome/>, or contact DSS at (202) 994-8250.

### **Grading**

#### **Method of Evaluation**

Class participation	15%
Object condition report	15%
Quizzes (2 @ 10%)	20%
Lab reports	15%
Paper (team grade)	20%
Presentation (team grade)	15%

#### **Letter Grade Equivalents**

Numerical scores for assignments are posted on the Blackboard site for the course. Final grades are based on the BB weighted calculations and given as letter grades according to the following GWU letter grade system:

93-100	A
90-92	A-

85-89	B+
80-84	B

## Assignments

### REFER TO COURSE SCHEDULE FOR DATES AND TIMES WHEN ASSIGNMENTS & QUIZZES ARE DUE

#### 1. **Paper - Qualitative Assessment of an Exhibit (group project)**

Working in teams, students will prepare a qualitative assessment of the agents of deterioration that might act on a particular long-term (more than 6 months) exhibit at a local museum. The exhibit must remain on view through the end of the semester and must incorporate a minimum of 4 different types of materials based on the categories discussed in class (plant, keratin/fibroin/chitin, collagen, inorganic non-metal, metal, natural composite, synthetic). The paper will:

- discuss the materials likely to be present in the objects on display and their vulnerability to agents of deterioration;
- provide data about agents of deterioration from repeated visits at different days of the week and times of day, including monitoring of temperature, relative humidity, and light levels
- prioritize the possible risks to the exhibit as a whole
- make recommendations concerning the steps that might be taken to verify and possibly mitigate the risks discussed in terms of short-, mid-, and long-term solutions
- provide estimates of probable costs involved in each mitigation step
- include references and full citations for all sources
- detail participation and contribution of each team member.

*Students are encouraged to discuss their exhibit choices with the instructors as soon as possible after the course begins so that the instructors can notify the museums involved about the projects and obtain any necessary permission.*

*Students will not contact museum staff independently, nor will they request access to the exhibits beyond that which is normal for members of the public visiting the facility*

#### 2. **Presentation of Qualitative Assessment (PPT group project)**

Each team will be asked to make a brief (approximately 10 minute) PowerPoint presentation on their findings at the final session of the course. Each member of the team must be part of the presentation. Practice as a group is essential for quick and smooth transitions – these are part of the total time allotment. Presentations will be structured as reports to a member of the museum's board and the museum's director (the instructors). The students in other teams will be asked to evaluate the structure and quality of the presentation effort (not the presentation content).

*Keep in mind that photography may not be permitted in some museums/exhibits, which could have an impact on the quality of the presentations.*

#### 3. **Condition Report (individual assignment)**

Each student is required to:

- select an object (containing 3 or more different materials based on the materials groupings used in the course (see above), must be approved by instructors. Object can be in a museum collection, but one owned by the student is preferred for access, handling, and photography purposes.
- prepare a numbered checklist of materials in the object, keyed by these numbers to a checklist of conditions applicable to each material
- prepare both a narrative description and a narrative condition assessment of the object
- incorporate all required data discussed in class
- add up to 6 images with appropriate documentation to the report
- include references and full citations for all sources and information on object or materials

A sample checklist and narrative assessment, and a glossary have been included in the scanned readings. You may adapt one of these or design your own, but **must incorporate all required data discussed in class.**

#### 4. **Lab Testing Reports (group project with individual or sub-team report preparation)**

Working in teams, students will test materials during two lab sessions. Using a format provided by the instructors students will prepare reports either individually or as part of a team, as assigned, on selected tests conducted during the lab sessions.

## Course Syllabus

### Sessions 1.1-2

#### Topics

Course overview

Preventive conservation - history, philosophy; conservation ethics and standards of practice  
Terminology used in chemistry, physics, and conservation practice  
Overview of materials in collections

#### Required Texts

[Philosophy/history/ethics](#)

Landry – Chapter 2

Szczepanowska – Chapters 1& 2

#### Scanned Required Readings

[Philosophy/history/ethics](#)

Koller, M. 1994. Learning from the history of preventive conservation. Pp. 1-6 in *Preventive Conservation Practice, Theory and Research* (A. Roy and P. Smith, eds). International Institute for Conservation, London.

Lambert, S. 2010. Italy and the history of preventive conservation. CeROArt. <http://ceroart.revues.org/1707>

Malaro, M. 1998. Pp. 1-28 in, *A Legal Primer on Managing Museum Collections*. 2<sup>nd</sup> ed. Smithsonian Institution Press, Washington, DC.

Merritt, J. and J. Reilly. 2010. Principles of preventive conservation: an overview. Pp. 11-16 in *Preventive Conservation for Historic House Museums* (J. Merritt and J. Reilly, eds.). AltaMira Press, Lanham, MD.  
*New Orleans Charter for Joint Preservation of Historic Structures and Artifacts*. 1992. Association for Preservation Technology International /American Institute for Conservation, Washington, DC.

Rose, C. and C. Hawks. 1995. A preventive conservation approach to the storage of collections. Pp. 1-17 in *Storage of Natural History Collections: A Preventive Conservation Approach* C. Rose, C. Hawks, and H. Genoways, eds.). Society for the Preservation of Natural History Collections, Iowa City.

Ruskin, J. 2013 reprint of 1849 original. The lamp of memory. Pp. 2-5 in *Historical Perspectives on Conservation* (S. Staniforth, ed.). Readings in Conservation. Getty Conservation Institute, Los Angeles.

[Terminology/Materials](#)

Weaver, G., J. Ashley-Smith, A. Roy, and S. Staniforth. 1987. Pp. 30-38, 63-87 in *An Introduction to Materials*. Science for Conservators, Vol. 1. The Conservation Unit, Museums & Galleries Commission, London.

#### Required Web Sites

[Philosophy/history/ethics](#)

*The AIC Code governs the activities of all US conservators who are Professional Associates and Fellows, no matter where they work.* American Institute for Conservation, *Code of Ethics and Guidelines for Practice* <http://www.conservation-us.org/index.cfm?fuseaction=page.viewpage&pageid=526>

[Terminology/Materials](#)

CAMEO materials database – become familiar with this resource of information on hundreds of materials found in museum collections [http://cameo.mfa.org/wiki/Category:Materials\\_database](http://cameo.mfa.org/wiki/Category:Materials_database)

#### Scanned Supplemental readings

[Philosophy/history/ethics](#)

Ashley-Smith, J. 1994. The ethics of conservation. Pp. 11-20 in *Care of Collections* (S. Knell, ed.). Routledge, London.

Philippot, P. 1996. Restoration from the perspective of the humanities. Pp. 216-229 in *Historical and Philosophical Issues in the Conservation of the Cultural Heritage* (N. Price, M. Talley, and A Vaccaro, eds.). The Getty Conservation Institute, Los Angeles.

Stoner, J. 1992. The mortality of things. Pp. 10-17 in *Caring for Your Collections* (A. Schultz, ed.). National Institute for Conservation and Harry N. Abrams, NY.

van der Burg, J. 2010. Preventive conservation, a deliberate choice. *e-Conservation Magazine* (14): 22-26.

Ward, P. 1989. pp. 9-11 in *The Nature of Conservation: A Race Against Time*. Getty Conservation Institute, Marina del Rey.

[Terminology/materials](#)

Phillimore, E. 1976. *A Glossary of Terms Useful in Conservation*. Canadian Museums Association, Ottawa.

#### Supplemental Web Sites

[Philosophy/history/ethics](#)

*The CAPC Code governs the activities of Canadian conservators who have obtained professional certification through CAPC, and is broadly applicable to all Canadian conservators, no matter where they work.* Canadian Association of Professional Conservators, *Code of Ethics*.

<http://capc-acrp.ca/ethics.asp>

[Terminology/materials](#)

AIC Caring for Your Treasures brochure series

<http://www.conservation-us.org/index.cfm?fuseaction=page.viewpage&pageid=497>

## **Sessions 2.1-2**

### Topics

- Object handling guidelines and demonstrations
- Condition assessments and condition reports
- Discussion of papers and presentations

### Required Texts

#### Handling

- Hawks et al. – Chapters 5, 8-12 and 15
- Szczepanowska – Chapter 3

### Scanned Required Readings

#### Condition assessments

Mack, A. 1996. *A Guide to Writing Artifact Condition Reports*. Rocky Mountain Regional Conservation Center, Denver, CO.

Kraft, L. 2010. Condition Report and Glossary.

Pozeilov, Y. 2013. iPad condition reporting 2.0. *WAAC Newsletter* 35(1):19-22.

### Required Web Sites

#### Condition assessments and handling

CAMEO materials database – become familiar with this resource of information on hundreds of materials found in museum collections [http://cameo.mfa.org/wiki/Category:Materials\\_database](http://cameo.mfa.org/wiki/Category:Materials_database)

### Scanned Supplemental Readings

#### Condition assessments

Canadian Conservation Institute. 2010. *The Identification of Natural Fibres*. CCI Notes 13/18. Canadian Conservation Institute. Ottawa. 6 pp.

#### Handling

Strahan, D. 2001. Uranium in glass, glazes and enamels: history, identification and handling. *Studies in Conservation* 46(3):181-195.

## **Sessions 3.1-2 Conservation Laboratories Tour at National Gallery of Art**

## **Sessions 4.1-2**

### Topics

- Imaging for condition documentation.
- Group discussions: object evaluations
- Qualitative assessments – general conservation surveys
- Exhibition walkthrough and preventive conservation critique at NMNH (time permitting)

### Required Texts

#### Photodocumentation

Warda et al. – Chapters 1-5

For *Supplemental Reading* on photo techniques, consult Chapter 6

### Scanned Required Readings

#### Photodocumentation

Cattrell, P. 2005. Pp. 16-18 in *Foundation Course: Photography*. Cassell Illustrated, London.

#### Qualitative assessments

Hirsch, J. and C. Gallagher. 2013. Defensible collections: designing a safe exhibit space. *Collection Forum* 27(1-2): 72-88.

Waller, R. 1995. Risk management applied to preventive conservation. Pp. 21-27 in *Storage of Natural History Collections: A Preventive Conservation Approach* C. Rose, C. Hawks, and H. Genoways, eds.). Society for the Preservation of Natural History Collections, Iowa City.

### Required Web Sites (review to understand nature of content)

#### Qualitative assessments

Collections Trust, *CollectionsLink* website. Benchmarks in Collections Care – benchmarking documents for care of various kinds of collections

<http://www.collectionslink.org.uk/component/acesearch/search?query=benchmarks+in+collection+care+pdf>

Heritage Preservation. *Conservation Assessment Program*. Heritage Preservation, Washington, DC.

<http://www.heritagepreservation.org/CAP/index.html>

### Scanned Supplemental Readings

#### Qualitative assessments

Heritage Preservation. 2002. *Best Practices for General Conservation Assessments*. Heritage Preservation, Washington, DC.

Heritage Preservation. 2004. *Best Practices for Conditions Assessments of Historic Structures*. Heritage Preservation, Washington, DC.

### Sessions 5.1-2

Agents of deterioration and mechanisms of damage to collections

Environmental agents and parameters for collections

Required Texts

#### Agents of deterioration

Landry – Chapter 1

#### Environmental agents

Ashley-Smith et al. – pp. 21-33 (article by Henderson and Dai), and ASHRAE – Chapter A-23 *Museums, Galleries, Archives, and Libraries*

Grzywacz – Chapters 3-5, and review Appendix 1 and Appendix 2

Hatchfield – pp. 5-42, 55-133, and review Appendix 2 and Appendix 3

Strang – Chapter 1

Required Web site (review to understand range of content)

#### Environmental agents

CCI Agents of deterioration <http://www.cci-icc.gc.ca/caringfor-prendresoindes/articles/10agents/index-eng.aspx>

Scanned Supplemental Readings

#### Agents of deterioration, including environmental agents

Ashley-Smith, J. 1999. Physical effect, pp.193-225 in *Risk Assessment for Object Conservation*. Butterworth Heinemann, Oxford, UK.

Bullock, L. and D. Saunders. 1999. Measurement of cumulative exposure using blue wool standards. Pp. 21-26 in *Preprints of the ICOM-CC 12<sup>th</sup> Triennial Meeting, Lyon, 29 August-3 September 1999*. James and James, London.

Cucci, C., A-L. Dupont, S. Gerlach, C. Loisel, M. Bacci, B. Lavédrine, and H. Roemich. 2004. LightCheck®, new systems for monitoring lighting conditions in museums. Pp. 10-16 in *AIC Research and Technical Studies Group 13 June 2004 Session Papers* (CD-ROM). AIC Research and Technical Studies Group, Washington, DC.

Hatchfield, P. 2011. Crack, warp, shrink, flake: a new look at conservation standards. *Museum* (Jan-Feb):40-43, 51-53.

Lambert, S. and J. Henderson. 2011. The carbon footprint of museum loans: a pilot study at Amgueddfa Cymru–National Museum Wales. *Journal of Museum Management and Curatorship* 26(3):1-27.

Lithgow, K., H. Lloyd, P. Brimblecomb, Y. Yoon, and D. Thickett. 2005. Managing dust in historic houses - a visitor/conservator interface. Pp. 662-669 in *Preprints of the COM-CC 14<sup>th</sup> Triennial Meeting, The Hague, 12-16 September 2005*. International Council of Museums and James & James Publishers, London.

Lloyd, H. and T. Mullany. 1994. The impact of overvisiting: methods of assessing the sustainable capacity of historic houses. Pp. 132-138 in *Preventive Conservation Practice, Theory and Research* (A. Roy and P. Smith, eds). International Institute for Conservation, London.

Merritt, J. and J. Reilly. 2010. Preventive conservation and light. Pp. 61-78 in *Preventive Conservation for Historic House Museums* (J. Merritt & J. Reilly, eds). Altimira Press, Lanham, MD.

Padfield, T. 2007. Why keep climate records – and how to keep them. Pp.157-163 in *Museum Microclimates: Contributions to the Conference in Copenhagen, November 2007* (T. Padfield and K. Borchersen, eds.). National Museum of Denmark, Copenhagen.

Pretzel, B. 2003. Materials and their interaction with museum objects. *V&A Conservation Journal* Summer (44): 1-4 & chart of pollutants vs materials.

Pretzel, B. 2008. Now you see it, now you don't: lighting decisions for the Ardabil carpet based on the probability of visual perception and rates of fading. Pp. 759-763 in *Preprints of the ICOM-CC 15<sup>th</sup> Triennial Meeting, New Delhi, 22-26 September 2008*. Getty Conservation Institute and Allied Publishers, New Delhi.

Saunders, D. and J. Kirby. 2008. A comparison of light-induced damage under common museum illuminants. Pp. 766-774 in *Preprints of the ICOM-CC 15<sup>th</sup> Triennial Meeting, New Delhi, 22-26 September 2008*. Getty Conservation Institute and Allied Publishers, New Delhi.

Schmidt, A., P. Bronée, K. Kemp, and J. Fenger. 2001. *Airborne Dust in a Museum Environment*. Taken from: [http://iaq.dk/iap/iap2001/2001\\_20.htm](http://iaq.dk/iap/iap2001/2001_20.htm)

Strang (from the required text) – any remaining chapters

Thorn, A. 2008. Vibration impact: methods and results of some recent studies. Pp. 783-90 in *Preprints of the ICOM-CC 15<sup>th</sup> Triennial Meeting, New Delhi, 22-26 September 2008*. Getty Conservation Institute and Allied Publishers, New Delhi.

Weintraub, S. 2003 *Demystifying Silica Gel*. Art Preservation Services, New York.

Weintraub, S. 2000. The color of white: is there a 'preferred' color temperature for the exhibition of works of art? *WAAC Newsletter* 21(3): 3 pp.

#### Other Supplemental Readings

##### Environmental agents

Ashley-Smith et al. (from the required text) – any remaining chapters.

### **Sessions 6.1-2**

#### Topics

Collagenous materials – sinew, gut, rawhide, tawed skin, tanned skin

Non-metallic inorganic materials – minerals, rocks/stone, pigments, glasses, glazes, ceramics,

#### Required Readings

##### Collagen

Szczepanowska – Chapter 7, pp. 169-182

##### Non-metallic inorganics

Szczepanowska – Chapter 9

#### Scanned Required Readings

##### Collagen

DeMouthe, J. 2006. Pp.122-133 in *Natural Materials: Sources, Properties, and Uses*. Elsevier, Amsterdam.

Haines, B.1991. Skin structure and leather properties. Pp. 1-4 in *Leather: Its Composition and Changes with Time* (C. Calnan and B. Haines, eds.). The Leather Conservation Centre, Northampton, UK.

Haines, B.1991. The structure of collagen. Pp. 5-9 in *Leather: Its Composition and Changes with Time* (C. Calnan and B. Haines, eds.). The Leather Conservation Centre, Northampton, UK.

Reed, R.1972. Table 1, p.47 in *Ancient Skins, Parchments, and Leathers*. Seminar Press, London.

Sykes, R. 1991. The principles of tanning. Pp. 10-11 in *Leather: Its Composition and Changes with Time* (C. Calnan and B. Haines, eds.). The Leather Conservation Centre, Northampton, UK.

##### Inorganic non-metals

Buys, S. and V. Oakley. 1993. The deterioration of ceramics. Pp. 18-28 in *The Conservation and Restoration of Ceramics*. Butterworth-Heinemann, Oxford.

Newton, R. and S. Davidson. 1989. Deterioration of glass. Pp.135-164 in *Conservation of Glass*. Butterworths, London.

Oakley, V. and K. Jain. 2002. Care of ceramic objects (Chapter 3). Pp. 19-30 in *Essentials in the Care and Conservation of Historical Ceramic Objects*. Archetype Publications, Ltd., London.

Wheeler, G. 1992. Stone objects. Pp. 122-127 in *Caring for Your Collections* (A. Schultz, ed.). National Institute for Conservation and Harry N. Abrams, NY.

#### Scanned Supplemental Readings

##### Collagen

Pool, M.1977. Preliminary analysis of the effects of cold storage on fur garments and mammal skins. *Collection Forum* 13(1):25-39.

Thomson, R.1991. A history of leather processing from the medieval to the present time. Pp. 12-15 in *Leather: Its Composition and Changes with Time* (C. Calnan and B. Haines, eds.). The Leather Conservation Centre, Northampton, UK.

von Endt, D.1984. Protein structure. Pp. 1-9 in *Protein Chemistry for Conservators* (C. Rose and D. von Endt, eds.). American Institute for Conservation, Washington, DC.

von Endt, D.1984. Collagen. Pp. 10-17 in *Protein Chemistry for Conservators* (C. Rose and D. von Endt, eds.). American Institute for Conservation, Washington, DC.

##### Non-metallic inorganics

Blount, A. 1993. Nature of the alterations which form on pyrite and marcasite during collection storage. *Collection Forum* 9(1): 1-16.

Buys, S. and V. Oakley. 1993. The technology of ceramics. Pp. 3-17 in *The Conservation and Restoration of Ceramics*. Butterworth-Heinemann, Oxford.

Craft, M. 1992. Decorative arts. Pp. 96-102 in *Caring for Your Collections* (A. Schultz, ed.). National Institute for Conservation and Harry N. Abrams, NY.

Fielden, B. 1994. Climatic causes of decay. Pp. 90-130 in *Conservation of Historic Buildings*. Butterworth-Heinemann, Oxford.



- Fitzhugh, E. and R. Gettens. 1971. Calcite and other efflorescent salts on objects stored in wooden museum cases. Pp. 91-102 in *Science and Archaeology* (R. Brill, ed.). 4<sup>th</sup> Symposium on Archaeological Chemistry, Atlantic City, 1968. MIT Press, Cambridge, MA.
- Howie, F. 1992. Elements, alloys, and miscellaneous minerals. Pp. 51-55 in *The Care and Conservation of Geological Materials*. Butterworth-Heinemann, Oxford.
- Nassau, K. 1992. Conserving light sensitive minerals and gems. Pp. 11-24 in *The Care and Conservation of Geological Materials*. Butterworth-Heinemann, Oxford.
- Winkler, E. 1982. Problems in the deterioration of stone. Pp. 108-119 in *Conservation of Historic Stone Buildings and Monuments*. National Academy Press, Washington, DC.

## **Sessions 7.1-2**

### Topics

- Plant materials
- Synthetic materials (plastics)

### Required Texts

#### Plant materials

Landry – Chapters 3, 4, 9, and 11

Szczepanowska – Chapter 6

#### Synthetic materials

Szczepanowska – Chapter 10

### Scanned Required Readings

#### Plant materials

Hatch, K. 1993. Cotton fiber. Pp. 162-171 in *Textile Science*. West Publishing Company, St. Paul.

Hatch, K. 1993. Specialty cellulosic fibers. Pp. 172-179 in *Textile Science*. West Publishing Company, St. Paul.

Williams, M. 1990. Pp. 13-22 in *Keeping It All Together: The Preservation and Care of Historic Furniture*. 2<sup>nd</sup> ed. Ohio Antique Review, Inc., Worthington, IL.

#### Synthetic materials

Nishimura, D. 1995. Film supports: negatives, transparencies, microforms, and motion pictures, and appendices. Pp. 365-393 in, *Storage of Natural History Collections: A Preventive Conservation Approach* (C. Rose, C. Hawks, and H. Genoways, eds.). Society for the Preservation of Natural History Collections, Iowa City.

Shashoua, Y. 2008. Pp. 193-225 in *Conservation of Plastics: Materials Science, Degradation, and Preservation*. Butterworth-Heinemann, Burlington, MA.

Tsang, J. 2010. Safe handling of plastics in a museum environment. *WAAC (Western Association for Art Conservation) Newsletter* 32(2):17-22.

Van Oosten, T., and A Laganá. 2010. A taste of plastics. *Contemporary Art Who Cares II*. Workshop, 9-11 June 2010, Amsterdam.

### Scanned Supplemental Readings

#### Plant materials

Boorstein, J. 1998. Interior woodwork. Pp. 140-151 in *Caring for Your Historic House*. Harry N. Abrams, New York.

Hamburg, D. 1992. Library and archival collections. Pp. 52-63 in *Caring for Your Collections*. Harry N. Abrams, New York.

Landi, S. 1992. Technology. Pp. 8-27 in *The Textile Conservator's Manual*. Butterworth-Heinemann, Oxford.

Norton, R. 1990. The technology of plant materials used in artifacts. Pp. 83-138 in *The Conservation of Artifacts Made from Plant Materials*. J. Paul Getty Trust, Los Angeles.

#### Synthetic materials

Blank, S. 1990. An introduction to plastics and rubbers in collections. *Studies in Conservation* 35:53-63.

Fenn, J. 2001. Plastic beads and buttons in social history collections: a dilemma. Pp. 53-63 in *Ethnographic Beadwork: Aspects of Manufacture, Use and Conservation* (M. Wright, ed.). Archetype Publications, London.

Loadman, M. 1991. Rubber: its history, composition and prospects for conservation. Pp. 65-73 in *Saving the Twentieth Century: The Conservation of Modern Materials* (D. Grattan, ed.). Canadian Conservation Institute, Ottawa.

Morgan, J. 1991. Pp. 14-34 in *Conservation of Plastics*. Plastics Historical Society and The Conservation Unit, Museums & Galleries Commission, London.

Quye, A. and B. Keneghan. 1999. Degredation. Pp. 111-135 in *Plastics: Collecting and Conserving* (A. Quye and C. Williamson, eds.). NMS Publishing Ltd., Edinburgh.

- Reilly, J. 1991. Celluloid objects: their chemistry and preservation. *JAIC* 30(2): 145-162.
- Rémillard, F. 2007. *Identification of Plastics and Elastomers: Miniaturized Tests*. Centre De Conservation Du Québec, Quebec.
- Williams, S. 2002. Care of plastics: malignant plastics. *WAAC (Western Association for Art Conservation) Newsletter* 24(1):10-15.

#### Supplemental Web Sites

##### Plant materials

AIC Objects Group Wiki

<http://www.conservation-wiki.com/index.php?title=Wood>

##### Synthetic materials

Image Permanence Institute Web site on preservation of photographic materials

<http://imagepermanenceinstitute.org>

Modern Plastics. Web page on identification of plastics

[http://www.modernplastics.com/how\\_to\\_identify\\_plastics.htm](http://www.modernplastics.com/how_to_identify_plastics.htm)

*Plastics History*. 2001. Web document from <http://www.mindfully.org/Plastic/Plastics-History.htm>

Tanagram Technology Ltd. Identification of plastics tests

[http://www.tanagram.co.uk/TI-Polymer-Identification\\_of\\_plastics.html](http://www.tanagram.co.uk/TI-Polymer-Identification_of_plastics.html) Topics

#### **Sessions 8.1-2**

##### Topics

Materials testing & lab safety

Choosing storage and exhibit materials for collections – chemical and physical properties, additives

Required Texts (distributed via email or on Blackboard)

##### Materials testing/lab safety

Packet on Laboratory Testing distributed by the course instructors

##### Choosing materials

Szczepanowska – Chapter 4

Scanned Required Readings

##### Materials testing/lab safety

American Chemical Society. 2006. *Safety for Introductory Chemistry Students*. American Chemical Society, Washington, DC.

Nishimura, D. 1995. Appendices. Pp. 384-393 in, *Storage of Natural History Collections: A Preventive Conservation Approach* C. Rose, C. Hawks, and H. Genoways, eds.). Society for the Preservation of Natural History Collections, Iowa City.

##### Choosing materials

ANSI/NISO. 2001. *Guidelines for Information about Preservation Products*. ANSI/NISO Z39.77-2001, ANSI, Bethesda, MD.

Hatchfield, P. 2004. Pollutants in the museum environment: practical strategies for problem solving in design, exhibition and storage. *WAAC Newsletter* 26(2):10-22.

Hawks, C. and L. Booth 2007. *Selecting Storage Furniture and Storage Materials for Museum Collections*.

Williams, S. 1999. Plastics for storage and display. Pp99-104 in *Plastics: Collecting and Conserving* (A. Quye and C. Williamson, eds.). NMS Publishing Ltd., Edinburgh.

#### **Sessions 9.1-2 and 10.1-2 (BRING INDIRECTLY-VENTED SAFETY GOGGLES AND HAND LENSES)**

##### Topic

Laboratory class - Materials testing

Required Texts for both lab classes

Laboratory Packet distributed by the instructors

Required Readings for both lab classes

All Required Readings on Materials Testing & Lab Safety from Session 8

Scanned Supplemental Reading for both lab classes

Williams, S., A. Brooks, S. Williams, and R. Hinrichs. 1998. *Guide to the Identification of Common Clear Plastic Films*. SPNHC Leaflet No.3. Society for the Preservation of Natural History Collections.

#### **Sessions 11.1-2**

##### Topics

Natural composites (intimate mixtures of organic and inorganic components in which the properties of the resulting material are dependent upon both components – bone, teeth/ivory, shell, eggshell)

Complex Objects (mixed media objects)

## Required Texts

### Natural composites

Szczepanowska – Chapter 7, pp. 182-187

### Complex objects

Landry – Chapters 7, 10, and 12

## Scanned Required Readings

### Natural composites

Halstead, L. 1974. Bone. Pp. 64-72 in *Vertebrate Hard Tissues*. Wykeham Publications, London.

Tennant, N. and T. Baird, 1985. The deterioration of mollusk collections: identification of shell efflorescence. *Studies in Conservation* 30:73-85.

## Required Web Sites (review to understand content)

### Natural composites

*Identification Guide for Ivory and Ivory Substitutes*. National Fish & Wildlife Service Forensic Laboratory.

<http://www.lab.fws.gov/ivory.php>

Researching Ivory – links to a host of resources regarding ivory,

<http://www.ebur.eu/index.php?q=1&s=0&t=1>

## Supplemental Readings

### Natural composites

Agnew, N. 1981. The corrosion of egg shells by acetic acid vapor. *ICCM Bulletin* 7(4):3-9.

Halstead, L. 1974. Scale and tooth dentine. Pp. 80-85 in *Vertebrate Hard Tissues*. Wykeham Publications, London.

McGregor, A. 1985. Pp.1-29 in *Bone, Antler, Ivory and Horn*. Croom Helm, Ltd., Beckenham, UK.

von Endt, D. pp.13-17 and 31-35 in *Protein Chemistry for Conservators* (C. Rose and D. von Endt, eds.). American Institute for Conservation, Washington, DC.

Williams, S. 1991. Investigation of the causes of structural damage to teeth in natural history collections. *Collection Forum* 7(1):13-25.

### Complex objects

Craft, M. 1992. Decorative arts. Pp. 96-102 in *Caring for Your Collections* (A. Schultz, ed.). National Institute for Conservation and Harry N. Abrams, NY.

Odell, S. 1992. Musical instruments. Pp. 128-137 in *Caring for Your Collections*. Harry N. Abrams, New York.

## Sessions 12.1-2

### Topics

Keratins, fibroin, chitin

Inorganic materials-metals

### Required Texts

#### Keratins, fibroin, chitin

Szczepanowska – Chapter 7, 187-201

#### Metals

Landry – Chapter 8

Szczepanowska – Chapter 8

### Scanned Required Readings

#### Keratins/fibroin

Hatch, K. 1993. Silk fibers. Pp.154-161 in *Textile Science*. West Publishing Company, St. Paul.

Hatch, K. 1993. Wool fibers. Pp.141-153 in *Textile Science*. West Publishing Company, St. Paul.

Minnesota Historical Society, n.d. *Quills, Horn, Hair, Feathers, Claws, and Baleen*. Minnesota Historical Society, Minneapolis, MN.

#### Metals

Eggert, G., A. Wollmann, B. Schwahn, E. Hustedt-Martens, B. Barbier, and H. Euler. 2008. When glass and metal corrode together. Pp. 211-216 in *Preprints of the ICOM-CC 15<sup>th</sup> Triennial Meeting, New Delhi, 22-26 September 2008*. Getty Conservation Institute and Allied Publishers, New Delhi.

Selwyn, L. 2004. Metals, corrosion, and specific corrosion problems, pp. 5-34, and Glossary, pp. 195-207, in *Metals and Corrosion: A Handbook for the Conservation Professional*. Canadian Conservation Institute, Ottawa.

Tennent, N., B. Cooksey, D. Littlejohn, B. Ottaway, S. Tarling, and M. Vickers. 1993. Unusual corrosion and efflorescence products on bronze and iron antiquities stored in wooden cabinets. Pp. 60-65 in *Conservation Science in the UK* (N. Tennent, ed.). James & James, London.

### Required Web site (review to understand nature of content)

#### Keratins

The Feather Atlas <http://www.lab.fws.gov/featheratlas>

#### Scanned Supplemental Readings

##### Keratins, fibroin

Cook, J. 1993. Silk. Pp. 144-165 in *Handbook of Textile Fibres*. Merrow, Durham, UK.

Halstead, L. 1974. Keratinaceous hard tissues. Pp.94-102 in *Vertebrate Hard Tissues*. Wykeham Publications, London.

Lauffenburger, J. 1993. Baleen in museum collections: its sources, uses, and identification. *JAIC* 32(3):213-230.

Lennox, F. and R. Rowlands. 1969. Photochemical degradation of keratins. *Photochemistry and Photobiology* 9:359-367.

Needles, H. 1984. Keratins and fibroin. Pp. 18-24 in *Protein Chemistry for Conservators* (C. Rose and D. von Endt, eds.). American Institute for Conservation, Washington, DC.

Pearlstein E. and L. Keene. 2009. Fading behavior of red-shafted flicker feathers. Powerpoint presentation from the conference, *Scraping Gut and Plucking Feathers*, 6 October, 2009, York, England.

##### Metals

Bray, W. 1993. Techniques of gilding and surface-enrichment in pre-Hispanic American metallurgy. Pp. 182-192 in *Metal Plating and Patination* (S. La Niece and P. Craddock, eds.). Butterworth-Heinemann, Oxford.

Drayman-Weisser, T. 1992. Metal objects. Pp. 107-121 in *Caring for Your Collections*. Harry N. Abrams, New York.

Oddy, A. 1993. Gilding of metals in the Old World. Pp. 171-181 in *Metal Plating and Patination* (S. La Niece and P. Craddock, eds.). Butterworth-Heinemann, Oxford.

Raub, C. 1993. The history of electroplating. Pp. 284-290 in *Metal Plating and Patination* (S. La Niece and P. Craddock, eds.). Butterworth-Heinemann, Oxford.

#### **Sessions 13.1-2**

##### Topics

Cultural sensitivity in collections care – Guest Lecturer or video presentation

Selecting and working with a conservator

##### Scanned Required Readings

##### Cultural Sensitivity

Clavir, M. 2002. Pp. 245-249 in *Preserving what is Valued*. University of British Columbia Press, Vancouver, BC.

Newsome, S. 2004. Personal reflections on the preservation and interpretation of African-American religious and spiritual traditions. Pp. 27-32 in *Stewards of the Sacred* (L Sullivan and A. Edwards, eds.). American Association of Museums and Center for Study of World Religions, Harvard University, Washington, DC.

Thomas, J. 2004. Handling considerations: one person's story. Pp. 7-10 in *Caring for American Indian Objects: A Practical and Cultural Guide*. Minnesota Historical Society, St. Paul, MN.

##### Selecting a Conservator

AIC Qualifications Task Force. 2003. *Defining the Conservator: Essential Competencies*. American Institute for Conservation, Washington, DC.

Sturman, S. 1992. Obtaining professional conservation services. Pp. 195-201 in *Caring for Your Collections*. Harry N. Abrams, New York

#### **Sessions 14.1-2**

##### **PRESENTATIONS and PAPERS DUE**

**RETURN COURSE READING CDs (mandatory to receive final grade)**