Cleveland State University  
Maxine Goodman Levin College of Urban Affairs  
Department of Urban Studies  
Spring 2017

UST 480/580: CONSERVATION TECHNIQUES FOR HISTORIC PRESERVATION  
4 credit hours

Instructor: Greg Frost, President Frost Building Maintenance, Inc.  
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Email: j.g.frost17@csuohio.edu
Class Time: UST 580 Tuesdays, 6:00 pm – 9:50 pm.  
UST 480 Tuesdays, 6:00 pm – 8:50 pm.
Credit Hours: 4
Prerequisites: Graduate Level requires UST 576 Historic Preservation

Class Locations: The first and most classes will be held at College of Urban Affairs, UR 326.
Other class locations, field trips, will be mostly very accessible by public transportation and car.  
On the first day of class, we will discuss logistics and try to assist all students in getting to each  
class via carpool if necessary.
Office Hours: By Appointment. Meetings at agreed upon CSU locations only.

Course Description

This course focuses on the technical methods for evaluating and conserving historic buildings.  
Students will gain knowledge about building materials, assessing building conditions, evaluating  
the cause of deterioration, repair/restoration techniques and traditional and modern repair  
materials. Throughout the semester, students will examine conservation projects in Cleveland /  
Northeast Ohio.

Course Objectives

This course provides students with both scholarly and practical skills. At the end of the semester,  
students will:

- Have a broad familiarity with conservation techniques used within the preservation  
  profession,
- Understand basic building conditions, including the common materials used in historic  
  buildings, probable causes of deterioration, and appropriate treatment options,
• Be familiar with the rehabilitation process, which includes identifying historic structures, building condition assessment, developing a rehabilitation plan,
• Be exposed to historic preservation projects in Cleveland and/or Northeast Ohio; and
• Have improved analytical, writing, and presentation skills.

### Course Requirements and Format

Students must be on time and attend all classes and field trips as best possible. Two absences will be allowed without points being deducted from the grading scale. Additional absences will result in a deduction of 5 points per additional absence. If the student knows in advance that a class will be missed, they should notify the instructor in advance, via email. In cases where missed classes exceed the two allowable limit, documentation of the reason why the additional classes were missed may reduce the points deducted from the students grade scale. Make up work may be negotiated with the instructor to reduce points deducted from the student grade scale.

Students must complete all assignments on time, (including in-class presentations), and take a final exam. If a student cannot complete an assignment, must miss a class where they are scheduled to give a presentation or take the final exam, the student must try to reschedule with the instructor or no points will be allowed for the missed work. Course grading will be based on attendance, participation, the quality of completed assignments and the final exam.

The class includes a mix of lectures, class discussions, guest speakers, student presentations, and field trips. You will be judged by your preparation and participation with invited guests via your attention and respectful discussion.

The course will primarily use student/instructor email for communication regarding class information, assignments and field trip scheduling. All email will be run through the CSU email system only. No personal email addresses will be recognized or responded to. The instructor will attempt to use CSU’s Blackboard system to disseminate information as the semester progresses, including assigned readings not included in the textbook. Therefore, students must have access to a computer and the Internet. Contact the University Help Desk (216-687-5050) or the Center for E-Learning ([http://www.csuohio.edu/elearning/](http://www.csuohio.edu/elearning/)) for issues with Blackboard. All assignments must be submitted in-class on the due date, with an electronic version submitted via email or through CSU email or Blackboard.

### Assignments and Grades

**Assignment 1: Deterioration Issues Memo/Presentation (Memo 10%, Presentation 10%)**
For this assignment the student will be randomly given one of the following topics and prepare a 5-page memo that explains the topic, the associated building/deterioration issues, methods of detecting the problem, and leading conservation techniques used to solve the problem. At the time of topic selection, students may trade topics to accommodate their particular interests. Each
A student will be required to give a five minute review of their paper. Up to ten slides may accompany each short presentation.

**Topics:**
- Wood Rot
- Mold/Abatement
- Asbestos/Abatement
- Hydrostatic Pressure
- Masonry Efflorescence
- Steel Corrosion/Rust Jacking
- Acid Corrosion, Acid Rain
- Carbonation of Concrete
- Lead/Abatement
- Ultra Violet Ray Exposure
- Salt Corrosion
- Freeze-Thaw Cycles

**Assignment 2: Building Conservation Case Study (Memo 20%, Presentation 10%)**
For this assignment you will prepare a 5-page memo detailing the conservation process for a preserved building in Cleveland / Northeast Ohio. You can select your own project, with instructor approval, or request a building be assigned for you. You will address the existing conditions of the building prior to intervention, the process of rehabilitating the structure, and the final product. Within this framework, you must identify: (1) the actors involved in the process, (2) the major material conservation issues involved, (3) the tools (financing, policy) used to successfully complete the project, and (4) any issues that arose during the project. You will be presenting your case study in class, using PowerPoint (5-10 minutes).

**Assignment 3: Building Assessment / Project Proposal (Memo 20%, Presentation 10%)**
For this assignment, you will complete a condition assessment and create a project proposal for a building in Cleveland/Northeast Ohio. You can select your own site or request one be assigned for you. If you select your own, you must have access to the site. You will be presenting your assessment and proposal in class, using PowerPoint (5-10 minutes). For the project, you will:
- Research the site’s background and/or historic significance
- Complete an onsite building inspection and condition assessment
- Propose a plan for building reuse if applicable
- Prepare a scope of work for repair/restoration
- Draw conclusions about the viability of your proposal (include pros/cons of the project and potential roadblocks)

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<th>Assignment</th>
<th>Points</th>
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<tr>
<td>Class Participation</td>
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<tr>
<td>Deterioration Issues Presentation</td>
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<tr>
<td>Deterioration Issues Memo</td>
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<tr>
<td>Building Conservation Case Study Presentation</td>
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<td><strong>Total</strong></td>
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## Required Text and Readings

This course has three required books:


Additional required readings will be emailed or posted on Blackboard.

## Course Content

**Defining “conservation”**

**Conservation ethics**

**Nomenclature for buildings (exterior and interior architecture and details)**

**Conservation methodology**

- Field observation and building condition assessments
- Techniques of documentation and recording

**Historic structures reports**

**Historic building materials:**

- Masonry (stone, brick, terra cotta, stucco, concrete, plasters)
- Wood and wood frame windows
- Cast iron and steel
- Slate (and other roofing materials)
- Paint and other surface treatments

**Major causes of deterioration**

- Water
- Pollution
- Chemical
- Insects

**Building maintenance practices**

**Funding conservation projects**

- Foundation / non-profit support and resources
- Grant-writing
- Tax credits (federal and state)

## Additional Readings: Recommended


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**University/College Policies**

**University Deadlines**

- For the current semester, the deadline for dropping a course is January 27, 2017.
- The last day to withdraw from the course is March 31, 2017.
- The final examination week is May 6-12, 2017.

**Student Grading**

CSU uses the following letter grades with plusses and minuses. In the Levin College the letter grades follow this numeric scale:

- A = 94-100%
- A- = 90-93
- B+ = 87-89
- B = 83-86
- B- = 80-82
- C+ = 77-79 (there is no C+ grade for graduate students; C = 70-79 for grad students)
- C = 70-76 for undergraduates, 70-79 for grad students
- D = 60-69 (there is no D for graduate students)
- F = 59 and below for undergraduates, 69 and below for graduate students
Grades of “I” and “X”

- **X** - The grade of "X" can be assigned by the instructor when an attending/participating student has stopped attending/participating without notification and has not completed all assignments for reasons that cannot be determined by the end of the grading period. An "X" automatically becomes an F if not resolved by the last day of instruction of the following semester. An “X” also will be assigned by the University Registrar when no grade is submitted by an instructor.

- **I** - Incomplete. The "I" grade is given when the work in a course has been generally passing, but when some specifically required task has not been completed through no fault of the student.

An "I" grade can be assigned by the instructor when all three of the following conditions are met:

1. Student is regularly attending/participating in the class and has the potential to pass the course;
2. Student has not completed all assignments and has stopped attending/participating for reasons deemed justified by the instructor; and
3. Student has notified the instructor prior to the end of the grading period.

**Students with Special Needs**

Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Disability Services at (216)687-2015. The Office is located in MC 147. Accommodations need to be requested in advance and will not be granted retroactively. Students should notify the instructor as soon as possible if they have been granted an accommodation through the Office of Disability Services.

**Writing Assistance**

Students with difficulty writing may contact the Writing Center located in Rhodes Tower 124 for assistance. Students should use the American Psychological Association (APA) format for citations and reference pages.

**Plagiarism**

Plagiarism is stealing and/or using the ideas or writings of another in a paper or report and claiming them as one’s own. This includes but is not limited to the use, by paraphrase or direct quotation, of the work of another person without full and clear acknowledgment. The penalties for plagiarism are found in full in the Student Handbook (Office of Student Life) under Academic Regulations (Policy on Academic Misconduct) at the following link: [https://www.csuohio.edu/sites/default/files/StudentCodeOfConduct.pdf](https://www.csuohio.edu/sites/default/files/StudentCodeOfConduct.pdf).
Class Schedule:

**Week 1, January 17: Introduction, Overview and Course Requirements**
Course review of requirements, personal information and assignments.
Discussion: Assignment 1: Deterioration Issues Memo/Presentation
Nomenclature discussion: Building fundamental elements. Foundations, frames...
Readings: NA

**Week 2, January 24: Investigation/Survey**
Discussion: Assignment 1 Topic Selection
Discussion: Readings.
Discussion: The purpose of the survey. Tools of the trade. Identifying deterioration.
Nomenclature discussion: Borescope, thermal imaging, crack monitor. Freeze-thaw deterioration, rust jacking and erosion.
33 [https://www.nps.gov/tps/how-to-preserve/briefs/43-historic-structure-reports.htm](https://www.nps.gov/tps/how-to-preserve/briefs/43-historic-structure-reports.htm)
47 [https://www.nps.gov/tps/how-to-preserve/briefs/47-maintaining-exteiors.htm](https://www.nps.gov/tps/how-to-preserve/briefs/47-maintaining-exteiors.htm)

**Week 3, January 31: Wood**
Guest Speaker
Discussion: Assignment 1: No Discussion
Discussion: Readings.
Discussion: Wood used as framing and siding. Common causes of deterioration and repair.
Nomenclature discussion: Types of wood. Timber framing used historically as well as today. Wood windows and siding.
45 [https://www.nps.gov/tps/how-to-preserve/briefs/45-wooden-porches.htm](https://www.nps.gov/tps/how-to-preserve/briefs/45-wooden-porches.htm)
**Week 4, February 7: Brick and Terra Cotta Masonry**

Discussion: Assignment 1 Progress.
Discussion: Readings.
Discussion: Masonry materials. Common causes of deterioration and repair.
Nomenclature discussion: Brick, terra cotta, mortar, sandstone, limestone, marble and granite. Freeze-thaw deterioration, rust jacking and erosion.

Readings:  
Friedman, Donald. *Historical Building Construction: Design, Materials & Technology*  Pages 114 – 130. 
7 [https://www.nps.gov/tps/how-to-preserve/briefs/7-terra-cotta.htm](https://www.nps.gov/tps/how-to-preserve/briefs/7-terra-cotta.htm)

**Week 5, February 14: Concrete and Cast Stone**

Assignment 1 due. Presentations and memos.
Discussion: Concrete and cast stone materials. Common causes of deterioration and repair. Discuss readings.
Nomenclature discussion: Cast stone, exposed aggregate, reinforcing steel...

Readings:  
Friedman, Donald. *Historical Building Construction: Design, Materials & Technology*  Pages 90 - 94 

**Week 6, February 21: Stone**

Discussion: Assignment 2: Building Conservation Case Study. Selection of buildings and important elements of the memo to be outlined.
Discussion: Natural stone used for structural and decorative applications. Common causes of deterioration and repair. Discuss readings.
Nomenclature discussion: Sandstone, limestone, marble, granite and rubble stone.

Readings:  
Government Recommendations: [https://www.gsa.gov/portal/content/112926](https://www.gsa.gov/portal/content/112926)
**Week 7, February 28: Roofing (Guest Speaker)**

Discussion: Assignment 2: Building Conservation Case Study progress.

Discussion: Roofing materials. Common causes of deterioration and repair.

Nomenclature discussion: Slate, tile, copper, wood shingles and asphalt.


Preservation Briefs 4 [https://www.nps.gov/tps/how-to-preserve/briefs/4-roofing.htm](https://www.nps.gov/tps/how-to-preserve/briefs/4-roofing.htm)

**Week 8, March 7: Materials Cast Iron and Steel**

Discussion: Assignment 2: Building Conservation Case Study. Selection of buildings and important elements of the memo to be outlined.

Discussion: Cast iron and steel used for structural and decorative applications. Common causes of deterioration and repair. Discuss readings.

Nomenclature discussion: Cast iron columns, facades, reinforcing steel used in concrete and as framing...


Friedman, Donald. *Historical Building Construction: Design, Materials & Technology* Pages 28 - 55


13 [https://www.nps.gov/tps/how-to-preserve/briefs/13-steel-windows.htm](https://www.nps.gov/tps/how-to-preserve/briefs/13-steel-windows.htm)

**Week 9, March 14: Spring Recess, No Class.**

**Week 10, March 21: Presentations**

Assignment 2: Building Conservation Case Study memo and presentations.

Discussion: Review presented materials and classes topics to date.

**Week 11, March 28: Interior Materials**

Discussion: Assignment 3: Building Assessment / Project Proposal. Selection of buildings and important elements of the memo to be outlined.


Nomenclature discussion: Ornamental plaster, ceramic tile, varnish, wood trim, metals.


Week 12, April 4: Windows/Glass (Potential Field Trip)
Discussion: Assignment 3: Building Assessment / Project Proposal.
Nomenclature discussion: Steel frame, wood frame, insulated glass, stained glass.
13 https://www.nps.gov/tps/how-to-preserve/briefs/13-steel-windows.htm
33 https://www.nps.gov/tps/how-to-preserve/briefs/33-stained-leaded-glass.htm

Week 13, April 11: Mechanical Systems (Field Trip for Hands On Restoration Techniques Training)
Location to be determined based upon student transportation needs.
Discussion: Assignment 3: Building Assessment / Project Proposal.
Hands on training in masonry repointing, paint stripping, caulking, and painting.
Nomenclature discussion: Electrical systems, HVAC, boiler works, insulation...

Week 14, April 18: Repair/Replacement Materials
Discussion: Assignment 3: Building Assessment / Project Proposal.
Discussion: Materials. When to replace materials and with what. Discuss readings.
Nomenclature discussion: Fiber reinforced plastic, vinyl, urethane foam, fiber reinforced concrete...
14 https://www.nps.gov/tps/how-to-preserve/briefs/14-exterior-additions.htm

Week 15, April 25: Presentations and Memos: Assignment 3: Building Assessment / Project Proposal

Week 16, May 2: Final Class
Discussion: Semester review. Extensive review in preparation for final exam.

Week 17, May 9: Final Exam