Instructor: Dr. Mario Santana Quintero  
  e-mail: Mario_santana@carleton.ca  
  ph. +1 (613) 520-2600 x 3093, Canal Building, Office 5207 (5th floor)

Lecture class: Mondays and Wednesdays 11:30 am to 12:55 pm. Room AA 204.

<table>
<thead>
<tr>
<th>Sectn</th>
<th>Day</th>
<th>Times</th>
<th>Field</th>
<th>Indoor</th>
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<tbody>
<tr>
<td>A2</td>
<td>Tue</td>
<td>8:30 am - 11:25 am</td>
<td>SITE</td>
<td>5301 CB</td>
</tr>
<tr>
<td>A1</td>
<td>Thu</td>
<td>2:35 pm - 5:25 pm</td>
<td>SITE</td>
<td>5301 CB</td>
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</table>

Labs:

Teaching Assistants: Carly Farmer, email: CarlyFarmer@cmail.carleton.ca and Michael Gutland, email: MichaelGutland@cmail.carleton.ca

Definitions:

Building Pathology is a term “used to define a holistic approach to understanding buildings. Such an approach requires a detailed knowledge of how buildings are constructed, used, occupied, and maintained, and the various mechanisms by which their structural, material and environmental conditions can be affected. It is, by necessity, an interdisciplinary approach and requires a wider recognition of the ways in which buildings and people respond and react to each other.” David Watt, *Building Pathology, Principles and Practice*, 1999

Rehabilitation is the “action or process of making possible a continuing or compatible contemporary use of an historic place, or an individual component, while protecting its heritage value.” Parks Canada, *The Standards and Guidelines for the Conservation of Historic Places in Canada*, 2011.

Description: Building Pathology and Rehabilitation is a core course of the Bachelor of Engineering (BEng) and Architectural Studies (BAS) with a Major in Architectural Conservation and Sustainability. It is taught in the 4th year of the programme, after students have been introduced to basic conservation and sustainability principles and fundamentals of building materials, assemblies and structures. Building on the
Architectural Technology courses taught throughout the BAS and BEng, and making use of basic documentation techniques learned in the Historic Sites Recording course, students will become familiar with the skills required to investigate and address the conservation and sustainability issues of historic and modern buildings. While focused on the building technologies of Eastern Canada’s existing building stock, the discussion and analysis will include examples of buildings from all types, sizes and locations.

Objectives: Working individually and in teams, students will acquire and apply:

- Understanding of historic and modern building envelope and structural systems, assemblies and materials and their patterns and causes of decay and deterioration.
- Methodology for the assessment of the physical condition and performance of buildings and the preparation of condition assessment and performance evaluation reports.
- Identification, analysis and diagnosis of materials, assemblies and structures;
- The roles of architects, engineers, materials conservation specialists, building scientists, architectural/ building historians, traditional building trades and other disciplines.
- Development of rehabilitation treatment options based on analysis of physical conditions, conservation principles and other criteria (health and safety, cost, accessibility, etc.)
- Specific issues of historic and modern building rehabilitation, including preserving patina, addressing inherent vice, locating substitute materials, using modern technologies and identifying appropriate skilled labour.

One of the underlying objectives is to help build an understanding of the connections between conservation and sustainability, and sustainable conservation strategies: Critical to the development of an integrated sustainable conservation project is the understanding of the history of the building’s construction and use, its inherent environmental features, past and current performance patterns, and the types and causes of deterioration of its specific materials, assemblies and structures. Effective affordable and respectful means of maintaining and repairing important and well-crafted built features should continue to offer years of use – thus sustaining our built heritage, and reducing the impact of new construction on the environment.

References: Through the use of a diverse range of paper and web-based references, students will also become familiar with the extent of Canadian and international resources available for working on historic/ existing buildings. There is no required textbook, but a wide range of critical texts are on reserve at the library.

A list of books on reserve and Internet resources is provided below. In addition, a list of weekly readings on specific topics will be provided at the first class.

Format: The course format will include lectures, site investigation and documentation, discussion of case studies, readings and research, essay and report writing and presentations by the students. The first ten weeks include a 3-hour lecture period and 2-hour lab led by the instructor. The lecture period will include teaching modules, discussion of assigned readings and presentation or review of assignments. Lab time will be used for fieldwork, to work on the four assignments described at the end of the
outline and or to meet the instructor. Lectures/field visits may include guest speakers. Students are encouraged to participate in analytical discussions and make links with other courses, projects and experiences.

**Grading:**

There are 2 class quizzes (10%) and a final exam (20%) dealing with in class readings about building pathology and rehabilitation, topics will be discussed during class. There will be four assignments, worth 60%. The description of each assessment follows the detailed course description below. The grading of the four assignments will be as follows:

- Assignment 1 10%
- Assignment 2 10%
- Class Quizzes 10%
- Assignment 3 20%
- Assignment 4 20%
- Final Exam 20%

The remaining 10% of the final mark is discretionary based on attendance, including punctuality, and participation in the weekly discussions of readings. Please show respect for all by allowing enough time to arrive before class begins, only leaving early following a prior explanation. Students will be asked to close laptops or other electronic devices during class discussions, exercises and presentations. There will be a bonus assignment worth 6% in total of additional grades.

Attendance in the first class is required, and there will be no make up time for students who join after the term has begun. There is no lab on the week January 5 to 9, 2015. Attendance at labs is also obligatory unless the instructor designates it otherwise at the time.

**A skills assessment questionnaire, which is not graded, will be completed during the first class,** in order to help identify the level of understanding of basic building technology and history, conservation and sustainable design principles, and the content and assignments may be adjusted accordingly.

Concise and accurate technical writing is important in professional work; student written and verbal work will be assessed on language (grammar, spelling, structure, style) as well as content.

**See also below for more general information.**

**Emails:**

Emails will be answered within 24 hours. Except for during the 30 minutes after class, meetings outside class hours will be by appointment only.

**OVERVIEW OF COURSE CONTENT**

- **Introduction**
- **Characterization of buildings**
- **Building pathology**
- **Materials, assemblies and structures:**
  - Building Envelope & Introduction
o Wood
o Masonry
o Metals
o Concrete
• Building rehabilitation
• Sustainable rehabilitation

DETAILS ON EACH TOPIC

INTRODUCTION

• Learning objectives, methodology, definitions
• The conservation process and values-based decision-making
• Bridging between conservation and sustainability
• Principles and practices
• The role of documentation
• Overview of principal references
• Overview of all assignments and student evaluation process
• BP&R skills assessment

CHARACTERIZATION OF BUILDINGS

1: Introduction:
• The importance of understanding/ being able to ‘read’ buildings for pathology
• Three types of characterization: construction, functional types and performance
• Sources of information: primary (site, archival documents) / secondary research

2: Construction types:
• Structural systems (masonry, timber, steel, concrete, hybrid)
• Assemblies (roofs and roof related elements, exterior walls and foundations, windows and doors, interior features and finishes)
• Materials (wood, stone, brick, metals, glass, plaster, stucco, tile, etc)
• Comfort and service systems (heating, ventilation, lighting, elevating, etc.)

3: Functional types:
• Residential, commercial, institutional, cultural, religious
• Issues due to scale, number and location of buildings

4: Performance and climate
• Standards and performance measures: comfort, security, acoustics, air quality
• Code requirements for existing buildings: fire protection, egress, accessibility
• Performance expectations: service life, obsolescence and life cycle
• Workmanship and design quality
• Site-specific, regional and climate-based conditions
• Inherent / historic environmental features: site, orientation, massing, materials, durability, natural daylight, ventilation

BUILDING PATHOLOGY

1: Building deterioration: defects, damage and decay
• Definitions: defects, damage, decay
Extrinsic versus intrinsic causes of deterioration
Understanding of weather and climate
Natural causes: water, wind, sun, freeze/thaw, fire, earthquakes, vegetation, insects
Human-made causes
Short-term deterioration (disasters)
Long-term deterioration (weathering or lack of maintenance)

2: Investigation: condition and performance assessment
- Step-by-step procedures of investigation and diagnostics
- The investigation team: architect, engineer, technologist, builder/craftperson
- Principles and proven methods
- Tools and resources
- Health and safety considerations
- The roles of building historians, materials conservators, conservation scientists, building science specialists, and traditional trades in an assessment
- Destructive and non-destructive testing
- Performance assessment tools and methods: thermal, seismic, comfort, etc
- Climate change considerations (impact assessment and mitigation)

3: Diagnostics: criteria and analysis
- Step by step: the process of analysis
- Review of applicable codes, standards and guidelines
- Evaluation of previous repairs and alterations
- Historic codes, standards and repair approaches
- Ageing and patina
- Durability and service life
- Inherent vice and design "flaws"
- Monitoring and testing
- Establishing priorities

MATERIALS, ASSEMBLIES AND STRUCTURES

1: Building Envelope: Roofs, Walls, Windows
- Building envelope characteristics, objectives and typical problems or deterioration
- Roofs and rainwater controls: types, components and problems of sloped and flat roofs
- Exterior walls including foundations, cladding, curtain walls: types, components and problems
- Windows and doors, including glazing materials, frames and hardware: types, components and problems
- Key sustainability issues and typical conservation strategies

2: Introduction to the Materials, Assemblies and Structures (MAS) modules
- Overview of the MAS modules. Each MAS module will address the specific:
- Examples of character-defining elements in Canadian buildings
- Key developments in the technology’s history
- Material and assembly/structure properties
- Typical deterioration and defects
Testing for identification of materials and assessment
Performance issues and sustainability
Conservation guidelines
Analysis and treatment options (Maintenance, Repair, Replacement)
Available references

3: Wood materials, assemblies, and structures
Including timber, wood, engineered wood products

4: Masonry materials, assemblies, and structures
Including natural stone, brick and terra cotta

5: Metal materials, assemblies, and structures
Including iron, steel(s), copper and alloys, and aluminum

6: Concrete materials, assemblies, and structures
Including cast stone, terrazzo and mortar

BUILDING REHABILITATION

1: Planning the repair approach
Criteria for treatment selection (e.g. heritage, health/safety, cost, sustainability)
Level of intervention: minimum intervention in addressing causes of deterioration
Principles of conservation repair / values-based decision-making
Integration of performance improvement objectives
Prioritization of proposed work
Modern repair technologies
Use of substitute materials, re-use of heritage materials, sourcing materials
Integration of specific treatments in an overall conservation plan

2: Addressing performance issues
Upgrades to meet changes to codes and standards
Addressing seismic, security & accessibility requirements
Improving thermal performance and other sustainability upgrades
Fire protection
Removal and encapsulation of toxic materials
Replacement of poor original materials or addressing poor design
Development of integrated treatment / upgrade options
Options analysis and recommendations

3: Planning repair work and upgrades
Step by step project planning (in public and private practice, for generalists and specialists).
Specifications for conservation and sustainability: reduced VOCs, embodied energy, durability, local materials and waste management
Site specific issues
Role of mock-ups
• Identifying appropriate skilled labour
• Pre-qualification of contractors
• Cost estimation
• Contracting considerations

SUSTAINABLE REHABILITATION

1: Sustainable conservation strategies
General & specific principles for integrating conservation and sustainability, including
• Integrated design process and community consultations
• Assessment of current conditions and performance
• Understanding of historic environmental design principles and features
• Application of common principles of minimal intervention (repair before replacement)
• Using appropriate new or historic technologies
• Designing for durability, compatibility and reversibility
• Planning for long-term use, growth and change

2: Sustainable conservation examples
• Case studies of successful integration of conservation and sustainability, including appropriate alterations of site, building envelope, systems and interiors
• Discussion of how to use environmental rating systems in the context of rehabilitation

REFERENCES

Readings will be identified from online sources as well as the following books on reserve at the library, quizzes, and the final examination will include selected questions from these readings:

• Eric Arthur, Thomas Ritchie, *Iron: cast and wrought iron in Canada from the seventeenth century to the present*, University of Toronto Press, 1982
• Jean Carroon, *Sustainable Preservation, Greening Existing Buildings*, Wiley, 2010
• Thomas F. McIlwraith, *Looking for Old Ontario, Two Centuries of Landscape Change*, University of Toronto Press, 1997
• John Rempel, *Building with Wood, and Other Aspects of Nineteenth-century Building in Central Canada*, University of Toronto Press, 1980
• Thomas Ritchie, *Canada Builds, 1867-1967*, University of Toronto Press, 1967
• Patrick Robson, *Structural Appraisal of Traditional Buildings*, Donhead, 2005

In addition, the following references are available online:


NB. In addition, the bibliography includes references from provincial heritage departments and organizations across the country.
• Canada Mortgage and Housing Corporation – Better Buildings Case Studies
  www.cmhc-schl.gc.ca/en/inpr/bude/himu/bebu/bebu_001.cfm#CP_JUMP_189275
• Canada Mortgage and Housing Corporation – Con Ed Articles for Architects: Building Envelope
  Online damage-expert for monumental buildings system
  http://mdcs.monumentenkennis.nl
• National Research Council of Canada – Canadian Building Digests
• *APT Bulletin* articles (through Jstor)
  www.apti.org/bulletin-index/
• *APT Publications – Historic Trade Publications*  
  www.apti.org/publications/apt-building-technology-heritage-library/
• USA National Parks Service Preservation Briefs and Tech Notes
  www.nps.gov/tps/how-to-preserve/briefs.htm
  www.nps.gov/tps/how-to-preserve/tech-notes.htm
• USA GSA HP Technical Procedures
  http://www.gsa.gov/portal/hp/hpc/category/100371/hostUri/portal/searchBy/ALL
• Getty Conservation Institute publications
  Myers, D. Smith, S.N. Shaer, M. A Didactic Case Study of Jarash Archaeological Site, Jordan: Stakeholders and Heritage Values in Site Management, The Getty Conservation Institute,
• National Institute of Building Sciences – Whole Building Design Guide
  www.wbdg.org/design/historic_pres.php  
  www.wbdg.org/design/sustainable.php
  www.wbdg.org/resources/sustainable_hp.php?r=historic_pres
• Historic England publications
  https://www.historicengland.org.uk/images-books/publications

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https://www.climatechangeandyourhome.org.uk
### Tentative schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Lab</th>
<th>Class</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>2</td>
<td>Jan 9</td>
<td>L01: Introduction to Building Pathology &amp; Rehabilitation</td>
<td>A01: Introduce Assignment 1</td>
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<tr>
<td></td>
<td>Jan 11</td>
<td>L02: Characterization of buildings; construction types; functional types; inherent environmental features</td>
<td>A01: Introduction to the Sites</td>
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<tr>
<td>3</td>
<td>Jan 16</td>
<td>Carleton Library Resources / Kristof Avramsson</td>
<td>Jan 18 L03: Building deterioration: Defects, damage and decay</td>
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<tr>
<td></td>
<td>Jan 18</td>
<td>Heather Thompson – NCA Introduction to Assignments</td>
<td>T01: Preparing Site Reconnaissance</td>
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<td>4</td>
<td>Jan 23</td>
<td>L04: Investigation: Condition &amp; Performance Assessment</td>
<td>Jan 25 L05: Values centered assessments</td>
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<td>Jan 25</td>
<td>T02: Introduction to readings and library material at Carleton Library</td>
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<tr>
<td>5</td>
<td>Jan 30</td>
<td>L05: Diagnostics, Criteria &amp; Analysis</td>
<td>Feb 2 L06: OSCAR system (C. Farmer)</td>
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<td>Feb 2</td>
<td>T03: Site visits Sheets (On Site)</td>
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<td>Feb 6</td>
<td>L06: Masonry materials, assemblies, and structures</td>
<td>Feb 8 L08: Repairs: Planning the conservation approach</td>
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<td>Feb 6-11</td>
<td>R01: Review of Building Characterization Sheets with TA</td>
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<td>Feb 6-11</td>
<td>R01: Review of Building Characterization Sheets with TA</td>
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<td>7</td>
<td>Feb 13</td>
<td>L09: Concrete materials, assemblies, and structures (Mariana)</td>
<td>Feb 15 L10: Practitioners: Guest lecture John Cooke on Assessing Building Conditions</td>
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<td></td>
<td>Feb 13 - 18</td>
<td>A03: Introduce Assignment 3</td>
<td>T04: Assignment 3</td>
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<tr>
<td>8</td>
<td>Feb 27</td>
<td>L10: Earthen Architecture conservation</td>
<td>Mar 1 L11: Case Study: Kasbah of Taourirt, Morocco</td>
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<td>Feb 27– Mar 3</td>
<td>L12: Upgrades: addressing performance issues</td>
<td>Working session on Assignment 3</td>
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<td>Mar 7 - 11</td>
<td>Working session on Photogrammetry for Assignment 3</td>
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<td>10</td>
<td>Mar 13</td>
<td>L15: Heritage professionals in Canada (L. Smith)</td>
<td>Mar 15 L16: Practitioners: Guest lecture Brian Hierlihy TBC</td>
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<td></td>
<td>Mar 13 - 17</td>
<td>T05: Assignment 4 and review Assignment 3</td>
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<td>Mar 20 - 24</td>
<td>T06: Working session on Assignment 4</td>
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<td>12</td>
<td>Mar 27</td>
<td>L19: Practitioners: James Maddigan TBC</td>
<td>Mar 29 Mar 27 – Apr 1 T07: 3D Scanning of Sites and reviews of A03 and A04</td>
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<td>Mar 27</td>
<td>Visit to the Delegation of the Ismaili Imamat Building at Sussex street, appointment at 11:30 am TBC</td>
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<td>Mar 27 – Apr 1</td>
<td>T07: 3D Scanning of Sites and reviews of A03 and A04</td>
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<td>12</td>
<td>Apr 3</td>
<td>L20: Key messages</td>
<td>Apr 5 Final Exam</td>
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CLASS QUIZZES

Students are expected to read class readings, as they provide useful and important information about understanding the performance, condition and potential conservation strategies for historic buildings. Two class quizzes worth 5% each will be conducted without prior notice. Questions will cover essential issues, the instructor will indicate potential topics throughout the course.

ASSIGNMENTS

Part of the evaluation of student work will be based on the following four assignments. For final details see the instruction sheets provided when the assignment is introduced. The schedule for submission will be described in the draft course schedule. An assignment handed in late will be deducted 10% per day from the assessed grade. The content of the four assignments may be altered depending on the results of the Skills Assessment Questionnaire completed in the first class.

Assignment 1: Building characterization – 2 pages (11 x 17) survey

Each group of student selects a building from a list of buildings and prepares a visual survey / building characterization sheet, which provides an overview of its character-defining elements, its construction and functional types, and identifies inherent environmental features. A group template will be developed/ provided based on models for inventories that have one page of text in point form, one overall photograph and one plan 10% of total mark. This building (or site) will be used during the entire class as case study.

Assignment 2: Conservation technology – 1500-word essay on issues

Each student selects a type of (historic or modern) building material, assembly or structure from the site being studied and will write a brief essay on this technology. The essay should provide a brief history of the technology’s development and use in Canada. Identify 2 pathological conditions or issues that affect this technology and 2 interventions that can enhance sustainability (ex. improved energy efficiency or life-cycle impact).

For each pathological condition:
1. briefly describe what the condition is (ex. identification and cause of the problem);
2. why it is important to repair this condition (ex. what are the benefits);
3. how to repair this condition;
4. concerns about repairs, if applicable (ex. a solution that works in one climate may not be suitable in another climate);
5. additional information about why this repair is sustainable.

For each sustainable intervention:
1. briefly describe what the intervention is;
2. what are the the benefits of this intervention;
3. how to implement this intervention;
4. concerns about this intervention, if applicable (ex. a solution that works in one climate may not be suitable in another climate);
5. additional information about why this intervention is sustainable.
6. In a table, state whether this intervention improves each of the following: insulation, air-tightness, ventilation, solar-heat gain/shading, daylighting, thermal mass, durability, repairability/ease of maintenance, embodied energy, end-of-life disposal

Topics are generally based on Eastern Canadian building technologies but topics from other regions or countries will be allowed with prior approval. The essay should be submitted in two-sided letter format with a cover page and may include up to five illustrations with credits. 10% of total mark. Bonus marks will be awarded for each topic that is not already part of the OSCAR website.

Assignment 3: A surface condition report – 2 pages, including a Measured Drawing and 400-word report

This is an assignment that is conducted in groups of two or three members of each team; it built on the Assignment 4, which is submitted by the entire. The purpose of this exercise is to reinforce the use, benefits, and constraints of recording techniques, in this case photogrammetry or rectified photography (learned on CIVE3207) to prepare an elevation drawing, as well as, to prepare a surface condition representation.

Each sub-team will prepare a measured drawing of at least one elevation using the total station, which is used to measure controls to reference and orientated photogrammetric models or rectified photographs to prepare a distortion free image. This is conducted using specialized software. This software allows users to produce corrected images from 3D models. Main features of the element should be drawn from the resulting ortho-image using CAD overlay (e.g. Windows, doors, pediment, etc). Equally, each sub team will identify construction materials (eg. stone type 1, stone type 2, brick type 1, etc) and deterioration patterns (eg. cracks, missing material, biological growth). 20% of total mark

Assignment 4: Conservation Investigation – field notes and report

This is the main course assignment. It includes site visit(s), investigation and recording of observed conditions, analysis of the causes of deterioration and recommendations for repair of the envelope and interiors of an Ottawa-area building (or site) used during the semester. The assignment will be reviewed and discussed according to: field notes, draft report, class presentation (during labs). A typical report table of contents will be provided. A PDF copy of the slides should be handed in one day before. The letter-size double-sided report will have a maximum of 12 pages of text and 8 pages of photos. 20% of total mark. Students are required to use the Nara Grid and the online damage-expert for monumental buildings system (http://mdcs.monumentenkennis.nl) to prepare this report.

FINAL EXAM

The final exam will cover basic understanding of material performance, condition and potential conservation strategies for maintenance of historic buildings, it builds up on the two quizzes conducted during class. This exam will be conducted the last day of class, it is worth 20%. It will consist of one questions related material conditions, one questions about performance and one question about a potential conservation strategy. Length of the Exam is 1h15m.

GENERAL CONDITIONS

Academic Accommodation

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You may need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations. Please review the course outline promptly and write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. It takes time to review and consider each request individually, and to arrange for accommodations where appropriate. Please make sure you respect these timelines particularly for in-class tests, mid-terms and final exams, as well as any change in due dates for papers. You can visit the Equity Service website to view the policies and to obtain more detailed information on academic accommodation at http://carleton.ca/equity/accommodation

Accessibility

Students with disabilities requiring academic accommodation in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website: http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/

Grading

For the grade in the “A” range, the instructor will have judged the student to have satisfied the stated objectives of the course in an outstanding to excellent manner; for the “B” range, in an above average manner; for the “C” range, in an average manner with C- being the lowest acceptable grade in the BAS - Design Core courses; for the “D” range, in the lowest acceptable manner in non-Core courses, and for “F”, not to have satisfied the stated objectives of the course. Grades will be assigned as A+ (90-100%), A (85-89%), A- (80-84%), B+ (77-79%), B (73-76%), B- (70-72%), C+ (67-69%), C (63-66%), C- (60-62%), D+ (57-59%), D (53-56%), D- (50-52%), F (0-49%) and ABS. A grade of C- or better in each course of the BAS - Design Core is required for a student to remain in Good Standing. Each grade will be based upon a comparison (1) with other students in the course and/or (2) with students who have previously taken the course and/or (3) with the instructor’s expectations relative to the stated objectives of the course, based on his/her experience and expertise.

(Please refer to the Undergraduate Calendar http://www.carleton.ca/calendars/ugrad/1011/regulations/acadregsuniv2.html#2.3 for regulations concerning grades and other program requirement information and http://www.carleton.ca/calendars/ugrad/1011/programs/architecturalstudies.html for regulations concerning grades and other program requirement information specific to the Architecture program.)

Student Conduct

Please refer to http://www.carleton.ca/calendars/ugrad/1011/regulations/acadregsuniv.html for specific information regarding Student Conduct and Academic Integrity standards.

Accreditation And Professional Experience

In Canada, all provincial associations recommend a degree from an accredited professional degree program as a prerequisite for licensure. The Canadian Architectural Certification Board (CACB), which is the sole agency authorized to accredit Canadian professional degree programs in architecture, recognizes two types of accredited degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards. Masters degree programs may consist of a pre-professional undergraduate degree and a
professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

**Student Performance Criteria**

For the purposes of accreditation, graduating students must demonstrate *understanding* or *ability* in the areas listed below, according to an established sequence. Specifically, this course meets the following criteria: A1 Critical Thinking Skills, A2 Research Skills, A4 Verbal and Writing Skills, A5 Collaborative Skills, B4 Sustainable Design, B6 Life Safety Systems, Building Codes & Standards, B7 Structural Systems, B9 Building Envelopes, B11 Building Materials and Assemblies, D2 Ethics and Professional Judgment.

**Retention Of Work**

The School of Architecture requires that each student produce reductions (normally 8 ½ x 11 inch reproductions, colour or black and white, slides, and/or digital format CD) of their work at the end of each term. One copy of the work should be put in the student’s portfolio and the other turned in to the instructor for retention in the School’s archives. Original work is the property of the students, but the School retains the right to keep work of merit for up to two years after the date of submission. The School will make every effort to preserve the work in good condition, and will give authorship credit and take care of its proper use.

**Health And Safety**

**Regulations for the School of Architecture**

- No Smoking
- No Flammable or Combustible Solvents, Paints, Gases or other Products
- No Aerosol or Pressurized Containers
- No Power Tools
- No Soldering
- No Bicycles
- No Open Flames
- No Toxic Chemicals
- No Vandalism (as defined by the Municipality of Ottawa)
- Avoid Creating Tripping Hazards
- Avoid Creating Fire Hazards
- Keep Aisles, Walkways, Corridors, Doorways, Stairwells and Fire Hose Cabinets clear at all times
- Avoid Working Alone After Hours
- Avoid Creating Excessive Dust and Noise

**Health & Safety Maintenance and Deposit Policy**

All students will be required to pay a deposit of $100 at the beginning of each academic year and to complete the *Health & Safety Maintenance and Deposit Agreement* form. This deposit (minus a $5.00 administrative fee) will be refunded at the end of the academic year with the understanding that: 1) A violation of the University Health and Safety policy will result in a fine of $50; 2) Students with more than one violation, will forfeit their security deposit and relinquish their right to work in the studio; 3) On clean-out day in April (assigned by the Studio/Major coordinator), all students will remove any and all remaining materials, possessions, and waste from their individual workspaces, or forfeit their entire deposit.

**In Case of Emergency, Dial Extension 4444 from any Studio phone.**

**First Aid is available between the hours of 8:30 a.m. and 4:30 p.m. Monday to Friday. in the Main Office (Room 202) or Workshop (Room 220)**

**First Aid Kits are available throughout the School.**

Revised – 11 January 2017