

**WESTERN UNIVERSITY  
FACULTY OF ENGINEERING  
DEPARTMENT OF CIVIL and ENVIRONMENTAL ENGINEERING**

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**CEE 9695L001 – Assessment and Retrofit of Masonry Structures  
Course Outline – Summer 2023**

- OBJECTIVES:** The objectives of this course are for the student to become able to:
1. Introduce the students to the characteristics of ancient, transit and modern masonry materials and systems
  2. Understand the evaluation and retrofit process of masonry structures
  3. Perform site investigation and analysis of existing masonry structures
  4. recognize available techniques used to repair, strengthen or upgrade existing masonry structures on both the local member level and global system level.
  5. Understand how to track building envelope response to structural and environmental loads using local and global monitoring techniques.
  6. Recognize maintenance process and activities including cleaning of masonry walls
  7. Learn how to develop a rational methodology for different types of masonry assessment and retrofit projects via case studies.

**PREREQUISITES:** Architectural, Civil or Mechanical undergraduate engineering degree.

**CONTACT HOURS:** 6 lecture hours/week. May 10 to June 5, 2022.  
Online tutorials/office hours 9:30-12:30 on June 7, 2023

**DAY/TIME** M W 9:30 – 12:30

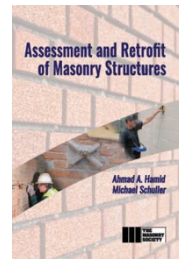
**TOPICS:** Introduction to ancient, transit and modern masonry, evaluation and retrofit process, site investigation and analysis, retrofit techniques, monitoring, and case studies.

<b>OUTLINE</b>	1- Introduction to Ancient Masonry	May 10
	2- Introduction to Modern Masonry	May 15
	3- Evaluation and Retrofit Process	May 17
	4- Site Investigation and Analysis	May 22
	5- Retrofit	May 24, 29
	6- Monitoring	May 31
	7- Case Studies	June 5

- Notes**
- The above topics will be covered via in-person lectures.
  - June 7 and 12 will be online tutorials during lecture hours 9:30-12:30. These time slots are office hours to answer questions regarding the term project and the final exam.

**INSTRUCTOR:** Dr. Ahmad Hamid, Emeritus Professor of Civil Engineering, Drexel University, Philadelphia, USA. E-Mail: hamidaa@drexel.edu

**TEXT:** Textbook “Assessment and Retrofit of Masonry Structures”, Ahmad Hamid and Michael Schuller, published by The Masonry Society in 2019.



**LABORATORY:** There is no formal laboratory component of this course.

**EVALUATION:**

Assignments	40%
Project (due date is June 21, 2023)	20%
Final Exam (June 14, 2023)	40%

**CHEATING, PLAGIARISM/ACADEMIC OFFENCES:**

Academic integrity is an essential component of learning activities. Students must have a clear understanding of the course activities in which they are expected to work alone (and what working alone implies) and the activities in which they can collaborate or seek help; see information above under “Assessments” and ask instructor for clarification if needed. Any unauthorized forms of help-seeking or collaboration will be considered an academic offense. University policy states that cheating is an academic offence. If you are caught cheating, there will be no second warning. Students must write their essays and assignments in their own words. Whenever students take an idea or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence. Academic offences are taken seriously and attended by academic penalties which may include expulsion from the program. Students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence (see Western's scholastic discipline regulations for graduate students).

**CONDUCT:**

Students are expected to follow proper etiquette during synchronous and asynchronous activities to maintain an appropriate and respectful academic environment. Any student who, in the

opinion of the instructor, is not appropriately participating in the synchronous and asynchronous learning activities and/or is not following the rules and responsibilities associated with the online learning activities, will be reported to the Associate Dean (Graduate) (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Associate Dean (Graduate), the student could be debarred from completing the assessment activities in the course as appropriate.

### **HEALTH/WELLNESS:**

As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several health and wellness related services (remotely accessible) to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Faculty of Engineering has a Student Wellness Counsellor. Information on how to schedule an appointment with the counsellor is available at: <https://www.eng.uwo.ca/undergraduate/academic-support-and-accommodations/Student-Wellness-Counselling.html>

Students who are in emotional/mental distress should refer to Mental Health@Western: <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

### **SICKNESS:**

Students should immediately consult with the Instructor (for a particular course) or Associate Chair (Graduate) (for a range of courses) if they have problems that could affect their performance. The student should seek advice from the Instructor or Associate Chair (Graduate) regarding how best to deal with the problem. Failure to notify the Instructor or the Associate Chair (Graduate) immediately (or as soon as possible thereafter) will have a negative effect on any appeal. Obtaining appropriate documentation (e.g., a note from the doctor) is valuable when asking for accommodation due to illness.

### **ACCESSIBILITY:**

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at 661-2111 x 82147 or [http://academicssupport.uwo.ca/accessible\\_education/index.html](http://academicssupport.uwo.ca/accessible_education/index.html), for any specific question regarding an accommodation.