Carleton University
Department of Civil and Environmental Engineering

CIVE 4403/5200 – Masonry Design

Instructor: Ted Sherwood  ted.sherwood@carleton.ca
Office: ME 3366

Online Office Hours: tbd
I am easily reached by email. This means I get many of them. Please use “CIVE 4403” or “CIVE 5200” in the subject header when emailing as it aids me in prioritizing yours above all others.

TAs: 1) tbd 2) tbd

Lectures: Every Thursday 8:35 – 11:25
Alternate Thursdays 11:35 – 2:25
(Sept 23, Oct 7, Oct 21, Nov 11, Nov 25, Dec 9)
No lectures or PAs during the week of Oct 25

PA:

Topics Covered:

1. Introduction
   - History of masonry and reinforced masonry
   - Structural design requirements, building loads, building layout
2. Material Properties
   - Concrete and clay masonry units, mortar, grout, reinforcement
   - Properties of masonry assemblages
3. Beams and Lintels
   - Singly and doubly-reinforced beams, deflections, shear, splices and development
4. Columns
   - Design of masonry columns, pilasters
   - Slenderness effects, biaxial bending.
5. Loadbearing Walls
   - Design of unreinforced walls and reinforced walls under axial load, combined axial load and bending. Slenderness effects
6. Shear Walls
   - Failure modes, distribution of lateral loads to walls, wall rigidity, flexural and shear design, seismic considerations
7. Brick Veneer and Cavity Walls
   - Masonry components of the building envelope, design of rain screen walls, wall detailing, shelf angles, building science
8. Design of Low-Rise Masonry Buildings
   - Bringing it all together: design of a low-rise industrial building

Note: topics may be added, modified or removed as the term progresses

Required Texts:


   This text has been generously donated by the Canada Masonry Design Centre (CMDC) and will be made available on CuLearn. It is being updated as we speak to match the 2014 version of the masonry code, so chapters will be made available as they are completed!

2) CSA S304-14: Design of Masonry Structures, Canadian Standards Association, 126pp.

   This text is available for free download from Carleton’s Techstreet database. (https://library.carleton.ca/find/databases/techstreet-enterprise)
Mark Breakdown:

Assignments 30% (About 8 to 10 in total through the term)
Midterm Exam 20% (October 21, 2 hours long)
Final Exam 50% (3 hours long, time and date tbd)

Lectures:

Lectures and PAs will be asynchronous. That is, I will record and place them online well in advance of their scheduled times. They will not be done live. You may then watch them whenever it suits you. I will usually place notes and handouts online to accompany the lectures. I will hold online office hours both during part of the lecture/PA times and outside those times. More information on office hours will be provided next week.

We will have a few guest lectures during the term. These will be done live and may be during either lecture or PA times.

Assignments:

Assignments must be completed in pencil on engineering computation paper using proper engineering format. If you do not have engineering computation paper you may make your own. Assignments must be neat, clear and of professional quality. Drawings are to be done by hand and in pencil. Assignments that are not handed in when due will immediately receive a 50% penalty. Thereafter a penalty of 10% per day will be assessed. To submit assignments please scan them, convert to a pdf and then submit through Brightspace.

Midterm and Final:

These will be written synchronously. That is, they will be done live. For the midterm the question sheet will be made available at 10:30am (EST) on October 21 and you must write the exam, scan it and submit it two hours later. A similar process will be followed for the final exam (the time and date of which will be determined later).

A minimum grade of 40 out of 100 must be obtained on the final exam in order to receive credit for the course.

General:

Students are required to check Brightspace and their Carleton email regularly for messages, updates and course content.

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation. Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/vmc) for the deadline to request accommodations for the formally-scheduled exam.