CIV ENG 4W04 – Design of Low Rise Buildings
McMaster University
COURSE OUTLINE
Winter 2019

Instructor: Dr. Mohamed Ezzeldin (ezzeldms@mcmaster.ca)
Office: JHE A111

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TA Office Hours: To be announced based on class schedules.

Classes:
Monday/Wednesday 8:30am-9:20am JHE A102
Friday 10:30am-11:20am JHE A102

Tutorials:
Wednesdays 9:30am-11:20am JHE A102

Textbooks:

Codes:
NBCC 2010 (On Reserve in Thode Library)
CSA S304.1 Design of Masonry Structures (Available Free through libraryaccess)
CSA O86.1 Engineering Design in Wood (Available Free through libraryaccess)

Marking: Marking will be done on a percentage basis and converted to the McMaster 12-point grade scheme. The final mark will be based on assignments, tests and final examinations.

Description: This course introduces design with new materials including masonry (bricks and blocks), wood and cold-formed steel. In addition to covering basic behaviour and design of components in buildings using these materials, single and multi-storey building behaviour relating to rigid and flexible diaphragms, as well as torsional response will be introduced. Building science factors affecting thermal and moisture-related performance will also be covered.
Approximate Distribution of Lectures:

- Masonry (4 Weeks)
  - Properties and Behaviour of materials
  - Beam Design
  - Reinforced and unreinforced construction
  - Wall design
  - Construction Details
  - Masonry building design examples

- Building Science and Performance (4 Weeks)
  - Thermal
  - Moisture
  - Lateral Load resistance
  - Torsional response
  - Diaphragms

- Wood Design (4 Weeks)
  - Basic Properties
  - Post and Beam Construction
  - Connections

The above is a tentative list of topics anticipated to be covered.

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Lectures and Tutorials:

The lectures will present theoretical/design background and some illustrative examples.

The tutorials will be used to demonstrate additional examples, provide assistance with problem solving, and for special presentations. In certain situations, the tutorial session may also be used to give a lecture; you will be notified in advance if this will occur. It is your responsibility to check the CIV ENG 4W04 course website (avenue to learn) on a regular basis.

Learning Objectives:

It is the expectation of the Civil Engineering department and the instructor that the students achieve the following learning objectives:

1. An understanding of common anisotropic materials for design of structural systems, specifically masonry and wood. This understanding should include the ability to
recognize the directional loading components in these systems and the structural implications of each mode of directional loading.

- Linkage to CEAB graduate attribute(s): 1.4

2. The ability to design modern low-rise buildings in accordance to applicable governing codes.

- Linkage to CEAB graduate attribute(s): 4.1, 4.2, 7.2 and 8.2.

3. An ability to predict the torsional performance and load distribution for a simple building layout when subjected to lateral loads (e.g. wind and earthquake).

- Linkage to CEAM graduate attribute(s): 1.3 and 1.4

4. The ability to identify deficiencies in proposed designs and offer suggestions for improvement.

- Linkage to CEAB graduate attribute(s): 2.2 and 4.3

**Evaluation:**

The final grade of the course will be based on:

- Assignments: 30%
- Two Mid-Term Tests: 30%
- Final Exam: 40%

**NOTE on evaluation:**

1. You must pass the combined test portion, midterms and finals, of the evaluation to pass the course. Passing each individual test is not required, but having a passing grade on the combined score from all three tests is required.

2. There will also be at least one field trip which forms “a part of the course requirements” and you may get questions related to what you have learned during the trip in the final exam. Relevant information regarding dates etc. will be announced during the lecture time as soon as they become available. Your course grade will be incomplete without participating in this trip.

**Assignments:**

The purpose of the assignment problems is to give you an opportunity to develop an in-depth understanding of the course material. While discussion with other students of the background and approach to solution of problems is often beneficial, you need to ensure that you can actually solve each problem on your own (i.e., the way it will be during the final exam). All work that you submit for grading must be your own work. Assistance on working out these problems will be available during the tutorial sessions.
Lateness Policy:

Unless the instructor has specifically allowed the late submission of a particular assignment for a particular student, lateness will be handled according to the following guidelines:

1. From 0-24 hrs late – 25% Penalty
2. From 24-48 hrs late – 50% Penalty
3. No submission allowed after 48 hrs.
4. All assignments are to be submitted to the CE4W04 box outside JHE-301/302 (no submissions are to be made to any other locations).
5. Any late assignment, including those authorized to be late without penalty by the instructor, are to be date and time stamped by the secretary in JHE 301 before submission.

MSAF Policy:

Students are allowed to use the MSAF tool according to the guidelines presented by the university. It is the student’s responsibility to use the MSAF tool correctly and within the guidelines as given by the university. The instructor exercises the right to decide on applicable relief for assignments/tests that are missed.

Conduct:

Students are expected to arrive at lectures, tutorials, and labs on time, and conduct themselves in a professional and respectful manner that is not disruptive to others. Cellular telephones shall be turned off during lectures, labs, and tutorial periods.

Adverse Discrimination:

The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem that cannot be resolved by discussion among the persons involved, individuals are reminded that they should contact their Department Chair, the Sexual Harassment Office or the Human Rights Consultant, as soon as possible.

Ethics:

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.
It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at:  
http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Health and Safety:

The Faculty of Engineering is committed to McMaster's University Workplace and Environmental Health and Safety Policy which states: "Students are required by University policy to comply with all University health, safety and environmental programs". It is your responsibility to understand McMaster University Workplace and Environmental Health and Safety programs and policies. For information on these programs and policies please refer to McMaster University Environmental and Health Support Services Occupational Safety Risk Management Manual at:  

It is also your responsibility to follow any specific Standard Operating Procedures (SOPs) provided for some of the experiments and the laboratory equipment.