

## 1. COURSE INFORMATION

Course Name:	Civil Engineering Materials and Design																						
Course Code:	CIVENG 3P04																						
Course credit hours:	4 credit hours																						
Session offered:	Fall 2023																						
Calendar description:	Characteristics, behaviour and use of Civil Engineering materials: concrete, steel, wood, and composites; Physical, chemical and mechanical properties; Quality control and material tests; Concepts of structural design, limit states design, estimation of structural loads.																						
Teaching approach:	Weekly three lectures plus one lab or tutorial																						
Pre-requisites:	Structural Mechanics (2C04), Structure and Properties of Materials (MATLS1M03)																						
Instructor:	Hisseine Ousmane	<b>Phone:</b> (905) 525-9140 x 20189 <b>Email:</b> <a href="mailto:hisseino@mcmaster.ca">hisseino@mcmaster.ca</a>																					
Teaching assistants (TA):	<table border="1"> <thead> <tr> <th>TA name</th> <th>email</th> <th>Office hours (room: <b>JHE329A</b>)</th> </tr> </thead> <tbody> <tr> <td>Great Anunike</td> <td><a href="mailto:anunikeg@mcmaster.ca">anunikeg@mcmaster.ca</a></td> <td>Wed: 09:30 to 11:30 Week 02 to</td> </tr> <tr> <td>TBA1</td> <td><a href="mailto:TBA1@mcmaster.ca">TBA1@mcmaster.ca</a></td> <td>Wed: 10:00 to 12:00 Week 06 to</td> </tr> <tr> <td>TBA2</td> <td><a href="mailto:TBA2@mcmaster.ca">TBA2@mcmaster.ca</a></td> <td>Wed: 10:00 to 12:00 Week 10 to</td> </tr> </tbody> </table>		TA name	email	Office hours (room: <b>JHE329A</b> )	Great Anunike	<a href="mailto:anunikeg@mcmaster.ca">anunikeg@mcmaster.ca</a>	Wed: 09:30 to 11:30 Week 02 to	TBA1	<a href="mailto:TBA1@mcmaster.ca">TBA1@mcmaster.ca</a>	Wed: 10:00 to 12:00 Week 06 to	TBA2	<a href="mailto:TBA2@mcmaster.ca">TBA2@mcmaster.ca</a>	Wed: 10:00 to 12:00 Week 10 to									
TA name	email	Office hours (room: <b>JHE329A</b> )																					
Great Anunike	<a href="mailto:anunikeg@mcmaster.ca">anunikeg@mcmaster.ca</a>	Wed: 09:30 to 11:30 Week 02 to																					
TBA1	<a href="mailto:TBA1@mcmaster.ca">TBA1@mcmaster.ca</a>	Wed: 10:00 to 12:00 Week 06 to																					
TBA2	<a href="mailto:TBA2@mcmaster.ca">TBA2@mcmaster.ca</a>	Wed: 10:00 to 12:00 Week 10 to																					
Schedule:	<p><b>Class lectures:</b></p> <p>⌚ <u>Time:</u> Monday and Thursday 4:30 PM – 5:20 ⌚ <u>Location:</u> as per Mosaic ⌚ <u>Time:</u> Tuesday 5:30PM - 6:20PM ⌚ <u>Location:</u> as per Mosaic</p> <p><b>Labs:</b></p> <table border="1"> <thead> <tr> <th>Lab session</th> <th>Timing</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>CIVENG 3P04-L01 (2728)</td> <td>Tu 8:30AM - 11:20AM</td> <td rowspan="4">As per Mosaic</td> </tr> <tr> <td>CIVENG 3P04-L02 (2729)</td> <td>Mo 12:30PM - 3:20PM</td> </tr> <tr> <td>CIVENG 3P04-L03 (2730)</td> <td>Mo 8:30AM - 11:20AM</td> </tr> <tr> <td>CIVENG 3P04-L04 (3217)</td> <td>Tu 12:30PM - 3:20PM</td> </tr> </tbody> </table> <p><b>Tutorials:</b></p> <table border="1"> <thead> <tr> <th>Tutorial session</th> <th>Timing</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>CIVENG 3P04-T01 (2731)</td> <td>Th 7:00PM - 9:00PM</td> <td>As per Mosaic</td> </tr> <tr> <td>CIVENG 3P04-T02 (2732)</td> <td>Th 7:00PM - 9:00PM</td> <td>As per Mosaic</td> </tr> </tbody> </table>		Lab session	Timing	Location	CIVENG 3P04-L01 (2728)	Tu 8:30AM - 11:20AM	As per Mosaic	CIVENG 3P04-L02 (2729)	Mo 12:30PM - 3:20PM	CIVENG 3P04-L03 (2730)	Mo 8:30AM - 11:20AM	CIVENG 3P04-L04 (3217)	Tu 12:30PM - 3:20PM	Tutorial session	Timing	Location	CIVENG 3P04-T01 (2731)	Th 7:00PM - 9:00PM	As per Mosaic	CIVENG 3P04-T02 (2732)	Th 7:00PM - 9:00PM	As per Mosaic
Lab session	Timing	Location																					
CIVENG 3P04-L01 (2728)	Tu 8:30AM - 11:20AM	As per Mosaic																					
CIVENG 3P04-L02 (2729)	Mo 12:30PM - 3:20PM																						
CIVENG 3P04-L03 (2730)	Mo 8:30AM - 11:20AM																						
CIVENG 3P04-L04 (3217)	Tu 12:30PM - 3:20PM																						
Tutorial session	Timing	Location																					
CIVENG 3P04-T01 (2731)	Th 7:00PM - 9:00PM	As per Mosaic																					
CIVENG 3P04-T02 (2732)	Th 7:00PM - 9:00PM	As per Mosaic																					
Website:	Please refer to <b>Avenue to Learn</b> ( <a href="http://avenue.mcmaster.ca">http://avenue.mcmaster.ca</a> ) where course documents, important information, and announcements will be posted regularly. It is the student's full responsibility to check the course website regularly.																						
Accommodations:	If you have unique circumstances, please feel free to reach out so that an accommodation may be arranged to help you achieve your learning goals for this course.																						

## 2. COURSE LEARNING OUTCOMES (CLOs)

Upon successful completion of this course, you will be able to:

**CLO 1:** Identify the key factors that affect the engineering properties of common construction materials (i.e., concrete, structural steel, and wood) as well as the important properties relevant to the design, construction and performance of structures made of these materials **[CEAB Indicator 1.2]**.

**CLO 2:** Characterize aggregates and calculate concrete mix proportions to formulate and produce a concrete mix for a target strength and durability **[CEAB Indicator 4.1]**.

**CLO 3:** Perform key laboratory tests/analysis of data to assess fresh and mechanical properties of concrete as well as report test results in a systematic and coherent form—following applicable engineering practice **[CEAB Indicators 6.1; 6.2]**.

**CLO 4:** Describe the engineering properties of reinforcing steel, structural steel, and other ferrous alloys necessary to meet the Canadian Standards (CSA) specifications **[CEAB Indicators 1.2]**.

**CLO 5:** Identify the key properties and applications of fibre reinforced polymers (FRP) in construction **[CEAB Indicator 1.2]**.

**CLO 6:** Identify the structure, properties, and use of wood in construction and its limitations as well as the factors that influence the mechanical properties and durability of wood **[CEAB Indicator 1.2]**.

**CLO 7:** Describe the structural design process, the concepts of load and resistance, as well as the concepts of uncertainty in design and its effect on the safety and serviceability of structures—with particular focus on the National Building Code of Canada **[CEAB Indicators 4.1; 7.2]**.

To achieve these CLOs, course content has been structured around five themes as depicted in below figure.

### Graduate attributes and CEAB indicators

Through this course, you will develop the following graduate attributes and indicators:

#### 1. A knowledge base for engineering

Demonstrated competence in university level mathematics, natural sciences, engineering fundamentals, and specialized engineering knowledge appropriate to the program.

##### 1.2 Competence in Natural Sciences

#### 4. Design

An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural and societal considerations.

##### 4.1 Recognizes and follows an engineering design process. (This means an iterative activity that might include recognizing the goal, specifying the constraints and desired outcomes, proposing solutions, evaluating alternatives, deciding on a solution, and implementing.)

#### 6. Individual and teamwork

An ability to work effectively as a member and leader in teams, preferably in a multi-disciplinary setting.

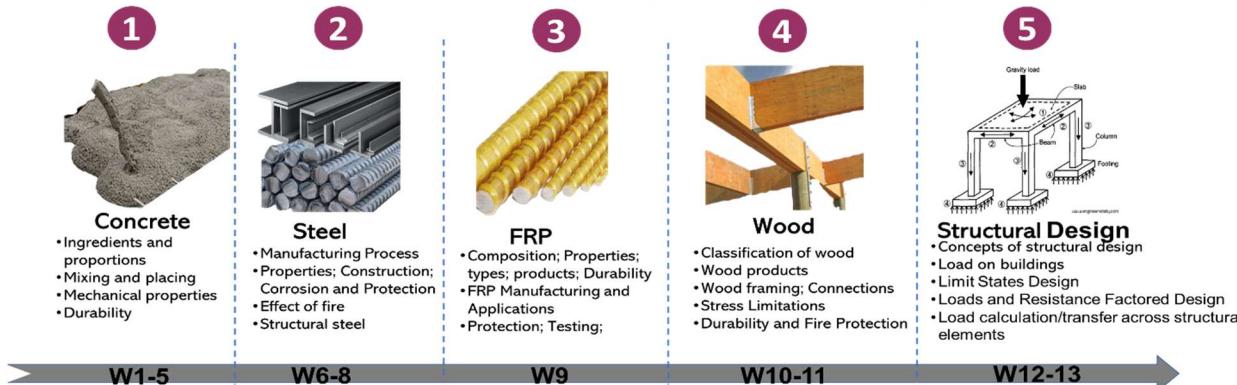
##### 6.1 Manages time and processes effectively, prioritizing competing demands to achieve personal and team goals and objectives.

##### 6.2 Develop and implement processes and methodologies to manage the effectiveness of a team both in terms of the quality of the work produced by the team as well as the inter-personal relationships within the team.

#### 7. Communication skills

An ability to communicate complex engineering concepts within the profession and with society at large. Such abilities include reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.

##### 7.2 Presents instructions and information clearly and concisely as appropriate to the audience



## COURSE OUTLINE

McMaster University

Department of Civil Engineering

### 3. COURSE SPECIFIC POLICIES

#### 3.1. Instructor expectations

For an enriching learning experience, students are expected to comply with the following guidelines:

- **Punctuality:** Students are expected to be on time. If occasionally delays occurred, please join the class while minimaxing the class.
- **Pre-class activity:** Some classes require pre-class short activities. Although pre-class activities (quizzes, discussion questions) are short, they are essential for preparing you for an enriching learning acquisition during the actual class.
- **In-class follow-up:** You may notice that some course notes pertaining to important concepts (e.g., diagrams, tables, figures, etc.) are **incomplete**. This is intentional so that students can complete their own notes in-class. Course notes will be available online ahead of class. Therefore, students are expected to have the notes (printed or soft) for personalized note taking. Students are expected to actively participate in every class.
- **Courtesy:** You are responsible of maintaining an enriching learning ecosystem. Electronic devices should be on either airplane mode or on silence. You are also expected to communicate (orally and in written) politely. **Offensive language or gestures are unacceptable.**

#### 3.1. Pedagogical approach

This course comprises class lectures, tutorials, and a laboratory component. Lectures are delivered by the course instructor using a blend of power point slides and videos. The laboratory component will take place in the [REDACTED] [REDACTED] Course TAs and [REDACTED] technical team will ensure lab logistics. Course instructor may occasionally attend lab sessions. Tutorials are run by TAs and are meant to review, discuss, and practice key principles presented in the core lectures.

#### 3.2. Continuous assessment:

To ensure continuous course improvement, students may be asked to respond to an anonymous electronic questionnaire — on course content, delivery method, and instructor's performance — managed **through McMaster's Institutional Quality Assurance Process (IQAP)**.

#### 3.3. Students' responsibilities

1. **Contact hours:** This is a 4-credit hour course. The weekly contact hours are split as follows: 3 hours for formal classes; and 1 hour for lab or tutorial.
2. **Workload:** To complete this course successfully, students must actively participate in all course components: class lectures, labs, and tutorial sessions.
3. **Course project:** The project is to be carried out in teams. Students are encouraged to form their teams following the first lecture. All team members **MUST** actively contribute to project realization.

#### 3.4. Bibliography

Cement Association of Canada, Design and Control of Concrete Mixtures 9<sup>th</sup> edition (EB101) softcover and online pdf pack, ISBN-13: 9781896553245.

You can access your course material through the Campus Store by clicking at [This link](#).

Class date YYYY-MM-DD	Learning outcomes/topics/activities	Description	Assignments
<b>Week 0*</b> <b>2022-08-29</b>  <u><b>Introduction</b></u> *A pre-semester activity conducted a week before classes begin	<b>Learning objective</b>	<ul style="list-style-type: none"> <li>Understand the place of this course in the curriculum and its utility to students' future professional ecosystem.</li> <li>Be aware of instructors' expectations, institutional policies, and student support resources.</li> </ul>	
	<b>Topics</b>	Course description; course learning outcomes, pedagogical approach, evaluation tools, expectations, institutional policies; and institutional resources.	
	<b>Learning activities</b>	<ul style="list-style-type: none"> <li>Online video introducing the course</li> </ul>	
<b>Week 1</b> <b>2022-09-04*</b>  <u><b>Introduction to concrete + Aggregates</b></u>  *First class on Tuesday <b>2022-09-05</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 1:</b> <u>Identify</u> the key factors that affect the engineering properties of common construction materials (i.e., concrete, structural steel, and wood) as well as the important properties relevant to the design, construction and performance of structures made of these materials [CEAB Indicator 1.2].	
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Concrete ingredients and proportions</li> <li>Concrete mixing and placing</li> <li>Aggregate types, size effect, gradation, and testing</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture (slides; videos; discussions)	
	<b>Lab session:</b> No lab		
<b>Week 2</b> <b>2022-09-11*</b>  <u><b>Concrete mix design</b></u>  *Last day for enrolment and course changes (drop/add): <b>2022-09-13</b>  <b>Tutorial (TA1)</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 2:</b> <u>Characterize</u> aggregates and <u>calculate</u> concrete mix proportions to formulate and <u>produce</u> a concrete mix for a target strength and durability [CEAB Indicator 4.1].	
	<b>Topics</b>	<ul style="list-style-type: none"> <li><u>Aggregates:</u> Choice of nominal size, effect of shape, surface texture, aggregate bulk density, relative density, absorption and surface moisture</li> <li><u>Cement:</u> history, manufacturing, types, properties, and applications</li> <li><u>Water:</u> Effect of Cl<sup>-</sup>, Sulphates, Alkalies, etc.</li> <li><u>Concrete mix:</u> Parameters, exposure classes, fresh properties</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: slides; discussions	
	<b>Lab session:</b> No lab		
<b>Week 3</b> <b>2022-09-18</b>  <u><b>Concrete mix design</b></u>  <b>Tutorial (TA1)</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 2:</b> <u>Characterize</u> aggregates and <u>calculate</u> concrete mix proportions to formulate and <u>produce</u> a concrete mix for a target strength and durability [CEAB Indicator 4.1].	<b>Assignment 1 Released:</b> <b>2022-09-22</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Mix design from specified strength/exposure</li> <li>Tips for enhancing concrete mix designs</li> <li>High-strength concrete; Concrete admixtures</li> <li>Supplementary cementitious materials</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; problem solving	
	<b>Lab session:</b> Characterization of aggregates		

## COURSE OUTLINE

McMaster University

Department of Civil Engineering

<p><b>Week 4</b> <b>2022-09-25*</b></p> <p><b><u>Fresh &amp; hardened properties of concrete</u></b></p> <p><b>*2022-09-30</b> National Day for Truth and Reconciliation: No classes</p>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 3:</b> <u>Perform</u> key laboratory tests/analysis of data to <u>assess</u> fresh and mechanical properties of concrete <u>as well as</u> <u>report</u> test results in a systematic and coherent form—following applicable engineering practice <b>[CEAB Indicators 6.1; 6.2].</b>	<b>Assignment 1:</b> <b>Due date:</b> <b>2022-09-29</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>• Slump, temperature, air content</li> <li>• Concrete placing, types of vibrators</li> <li>• Hardened properties: compressive strength, elastic modulus, creep, shrinkage, expansion</li> <li>• Joints, Hot weather placement, cold weather placement, saw cut, construction joints</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; problem solving	
	<b>Lab session:</b> No lab		
<p><b>Week 5</b> <b>2022-10-02</b> <b>Week 4</b></p> <p><b><u>Mix design with moisture Durability</u></b></p> <p><b>Tutorial (Mouna)</b></p>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 2:</b> <u>Characterize</u> aggregates and <u>calculate</u> concrete mix proportions to formulate and <u>produce</u> a concrete mix for a target strength and durability <b>[CEAB Indicator 4.1].</b>	<b>Assignment 2</b> <b>Released:</b> <b>2022-10-06</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>• Mix design <u>with moisture content</u>: Solved example</li> <li>• Concrete durability</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; problem solving	
	<b>Lab session:</b> Concrete mixing		
<b>Week 6</b>	<b>Reading week:</b> 2022-10-9 to 2022-10-15 Technical team in [ ] takes shrinkage measurements and hands to TAs		
<p><b>Week 7</b> <b>2022-10-16</b></p> <p><b><u>Steel reinforcement</u></b></p> <p><b>Tutorial (TA2)</b></p>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 4:</b> <u>Describe</u> the engineering properties of reinforcing steel, structural steel, and other ferrous alloys necessary to meet the Canadian Standards (CSA) specifications <b>[CEAB Indicator 1.2].</b>	Midterm exam: <b>2022-10-19</b> During class time
	<b>Topics</b>	<ul style="list-style-type: none"> <li>• Steel bars: types; coating; fabrication; placing; storage and handling</li> <li>• Stainless steel; epoxy-coated steel; Hot dip galvanized steel</li> <li>• Concrete cover and placing of steel</li> <li>• Wall reinforcement</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; videos; discussions	
	<b>Lab session:</b> One member/team takes shrinkage measurements		
<p><b>Week 8</b> <b>2022-10-23</b></p> <p><b><u>Structural Steel</u></b></p> <p><b>Tutorial (TA2)</b></p>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 4:</b> <u>Describe</u> the engineering properties of reinforcing steel, structural steel, and other ferrous alloys necessary to meet the Canadian Standards (CSA) specifications <b>[CEAB Indicator 1.2].</b>	<b>Assignment 3</b> <b>Released:</b> <b>2022-10-27</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>• Steel Manufacturing Process</li> <li>• Properties; Construction; Corrosion and Protection</li> <li>• Fire Effect on Steel and Protection</li> <li>• Cold Formed Steel Members</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; videos; discussions	
	<b>Lab session:</b> One member/team takes shrinkage measurements		

## COURSE OUTLINE

McMaster University

Department of Civil Engineering

<b>Week 9</b> <b>2022-10-30</b> <u>Fiber Reinforced Polymers (FRP)</u> <b>Tutorial (TA2)</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 5:</b> <u>Identify</u> the key properties and applications of fibre reinforced polymers (FRP) in construction [CEAB Indicator 1.2].	<b>Assignment 3</b> <b>Due:</b> <b>2022-11-03</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Composition; properties; types; products; durability</li> <li>FRP Manufacturing and applications</li> <li>Examples; testing; protection</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; videos; discussions	
	<b>Lab session:</b> Mechanical Properties		
<b>Week 10</b> <b>2022-11-06*</b> <u>Wood</u> *Last day for withdrawing from courses without failure by default: <b>2022-11-10</b>		<b>CLO 6:</b> <u>Identify</u> the structure, properties, and use of wood in construction and its limitations as well as the factors that influence the mechanical properties and durability of wood [CEAB Indicator 1.2].	<b>Assignment 4</b> <b>Released:</b> <b>2022-11-10</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Classification of wood</li> <li>Wood products</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; videos;	
	<b>No lab sessions:</b> Preparation of lab reports		
<b>Week 11</b> <b>2022-11-13</b> <u>Wood Structures</u> <b>Tutorial (TA3)</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 6:</b> <u>Identify</u> the structure, properties, and use of wood in construction and its limitations as well as the factors that influence the mechanical properties and durability of wood [CEAB Indicator 1.2].	<b>Assignment 4</b> <b>Due:</b> <b>2022-11-17</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Wood framing; connections</li> <li>Stress Limitations</li> <li>Durability and Fire Protection</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; videos;	
	<b>No lab sessions:</b> Preparation of lab reports		
<b>Week 12</b> <b>2022-11-20</b> <u>Structural Design</u> <b>Tutorial (TA3)</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 7:</b> <u>Describe</u> the structural design process, the concepts of load and resistance, <u>as well as</u> the concepts of uncertainty in design and its effect on the safety and serviceability of structures—with particular focus on the National Building Code of Canada [CEAB Indicators 8.1; 9.2].	<b>Assignment 5</b> <b>Released:</b> <b>2022-11-24</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Concepts of structural design</li> <li>Load on buildings</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; problem solving	
	<b>Lab session:</b> Submission of lab reports <b>2022-11-22</b>		
<b>Week 13*</b> <b>2022-11-27</b> <u>Structural Design</u> *Classes end on <b>2022-12-06</b> <b>Tutorial (all TAs)</b>	<b>Course learning outcomes (CLOs)</b>	<b>CLO 7:</b> <u>Describe</u> the structural design process, the concepts of load and resistance, <u>as well as</u> the concepts of uncertainty in design and its effect on the safety and serviceability of structures based on the Canadian National Building Code [CEAB Indicators 4.1; 7.2].	<b>Assignment 5</b> <b>Due:</b> <b>2022-12-01</b>
	<b>Topics</b>	<ul style="list-style-type: none"> <li>Limit States Design</li> <li>Loads and Resistance Factored Design</li> <li>Load calculation/transfer across structural elements</li> </ul>	
	<b>Learning activities</b>	3 hours formal lecture: Slides; problem solving	
	Please check course website for the updated McMaster University calendar for final exams.		

## COURSE OUTLINE

McMaster University

Department of Civil Engineering

## 4. ASSESSMENT OF LEARNING

### 4.1. Assessment tools: Students will be evaluated on the following items:

- **5 Assignments (10%)**
- **Concrete mix design project (20%)**
- **Midterm exam (30%)**: A one-hour written, open-book exam designed to evaluate the level of achievement of Course Learning Outcomes (CLOs) 1 and 2.
- **Final exam (40%)**: A two-hour written, open-book exam designed to assess the level of achievement of CLOs 3, and 4.

The following table shows the links between the different assessment tools and the specific CLOs.

Evaluation	Weight	Date (D/M/Y)	Targeted Course Learning Outcomes (CLO)						
			CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7
Assignment 1	02	2022-09-29							
Assignment 2	02	2022-10-08							
Assignment 3	02	2022-11-04							
Assignment 4	02	2022-11-16							
Assignment 5	02	2022-11-30							
Project	20	2022-11-18							
Midterm exam	30	2022-10-20							
Final exam	40	TBD*							

\*Check the final exam calendar

### 4.2. Assessment criteria: Resources on course website provide the evaluation grid for each assessment tool.

## 5. LABORATORY SAFETY

The Faculty of Engineering is committed to McMaster University's 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 and policies". 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](#). It is also your responsibility to follow any specific Standard Operating Procedures (SOPs) provided for specific experiments (see course lab manuals) and the laboratory equipment (see Department Safety Manual). McMaster University's workplace [health and safety guidance related to COVID-19](#) should always be followed.

The safety requirements for all Civil Engineering laboratories are listed below. Students not abiding by these safety requirements will be given one warning. Second offences will result in the student being asked to vacate the laboratory and receiving a grade of zero for that particular lab.

- Glasses or safety glasses/goggles must be worn in the lab at all times
- Contact lenses are not to be worn in the lab.
- No short (i.e., above the knee) pants or skirts are permitted in the lab – lab coats must be worn over top of your clothing in these instances.
- Closed-toe shoes must be worn at all times.
- No loose clothing allowed.
- Long hair must be tied back.
- Gloves must be worn when working with hazardous chemicals (as indicated by the laboratory instructor).

## 6. COMMUNICATIONS

### COURSE OUTLINE

McMaster University

Department of Civil Engineering

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their "@mcmaster.ca" alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.
- Check the McMaster/Avenue email and course websites on a regular basis during the term

## 7. POLICIES

### 7.1. Academic integrity

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. It is your responsibility to understand what constitutes academic dishonesty. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour 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. For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](#), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>.

The following illustrates only three forms of academic dishonesty:

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

### 7.2. Authenticity/plagiarism detection

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g., A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

### 7.3. Courses with an on-line element

Some courses may use on-line elements (e.g., e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, usernames for the McMaster email accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

### 7.4. Online proctoring

**Some courses may** use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

## **7.5. Conduct expectations**

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [\*\*Code of Student Rights & Responsibilities\*\*](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**. It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g., use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

## **7.6. Academic accommodation of students with disabilities**

Students with disabilities who require academic accommodation must contact [\*\*Student Accessibility Services\*\*](#) (SAS) at 905-525-9140 ext. 28652 or [sas@mcmaster.ca](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster University’s [\*\*Academic Accommodation of Students with Disabilities\*\*](#) policy

## **7.7. Requests for relief for missed academic term work**

[\*\*McMaster Student Absence Form \(MSAF\)\*\*](#): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “[\*\*Requests for Relief for Missed Academic Term Work\*\*](#)”. The McMaster Student Absence Form is a self-reporting tool for **Undergraduate Students** to report absences that last up to 5 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period. You may submit a maximum of 1 Academic Work Missed requests per term. It is **your** responsibility to follow up with your Instructor immediately regarding the nature of the accommodation. If you are absent more than 5 days or exceed 1 request per term you **must** visit your Associate Dean’s Office (Faculty Office). You may be required to provide supporting documentation. This form should be filled out immediately when you are about to return to class after your absence.

## **7.8. Academic accommodation for religious, indigenous, or spiritual observances (RISO)**

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar’s Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

## **7.9. Copyright and recording**

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, including lectures by University instructors. The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

### **7.10. Protection of privacy act (FIPPA)**

The Freedom of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades, and all other personal information at all times. For example, the submission and return of assignments and the posting of grades must be done in a manner that ensures confidentiality – see <http://www.mcmaster.ca/univsec/fippa/fippa.cfm>.

### **7.11. Anti-discrimination**

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer, or the Human Rights Consultant, as soon as possible. [https://www.mcmaster.ca/policy/General/HR/Discrimination\\_and\\_Harassment.pdf](https://www.mcmaster.ca/policy/General/HR/Discrimination_and_Harassment.pdf)

### **7.12. Extreme circumstances**

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

## **8. MCMASTER GRADING SCALE**

Grade	Equivalent Grade Point	Equivalent Percentages
A+	12	90-100
A	11	85-89
A-	10	80-84
B+	9	77-79
B	8	73-76
B-	7	70-72
C+	6	67-69
C	5	63-66
C-	4	60-62
D+	3	57-59
D	2	53-56
D-	1	50-52
F	0	0-49