McMaster University | ENGINEERING

COURSE OUTLINE

COURSE INFORMATION

Course Name: **Design and Synthesis Project in Civil Engineering** Course Code: **CE 4X06A/B**
Session Offered: Fall 2025 & Winter 2026
Calendar Description: Capstone project supervised by faculty members in civil engineering, involving design and synthesis that reinforces concepts from structural and/or municipal engineering. Exposure to elements of teamwork, sustainability, social responsibility, and project management.

Fall Instructor(s):	**Email**	**Office**	**Office Hours/Contact:**	
Dr. Samir E. Chidiac	chidiac@mcmaster.ca	JHE A414	Upon request	
Dr. Sarah Dickson-Anderson	sdickso@mcmaster.ca	JHE H323	Upon request	
Lecture Schedule Day(s):	Tue, Wed, Fri	Time:	9:30 AM – 10:20 AM	MDCL 1102
Laboratory Schedule Day(s):	Wed	Time:	8:30 AM – 9:20 AM	MDCL 1102
	Fri	Time:	10:30 AM – 11:20 AM	MDCL 1102

Winter Instructor(s):	**Email**	**Office**	**Office Hours/Contact:**	
Dr. Peijun Guo	guop@mcmaster.ca	JHE A411	Upon request	
Dr. Zoe Li	zoeli@mcmaster.ca	JHE 335	Upon request	
Lecture Schedule Day(s):	Tue, Wed, Fri	Time:	9:30 AM – 10:20 AM	MDCL 1102
Laboratory Schedule Day(s):	Wed	Time:	8:30 AM – 9:20 AM	MDCL 1102
	Fri	Time:	10:30 AM – 11:20 AM	MDCL 1102

1. COURSE OBJECTIVES

This course is designed to provide students with the opportunity to integrate and demonstrate their accumulated knowledge through a comprehensive, real-world design project. Considerable emphasis is placed on the fundamentals of design, while also accounting for sustainability, economics, social impact, and accessible/universal design. Students are encouraged to pursue innovative solutions that strengthen the resiliency and enhance the vibrancy of built communities and their supporting infrastructure.

2. COURSE SPECIFIC POLICIES

Student self-reflection

Every student must submit a self-reflection report on the last Friday of September 2025 and January 2026. For information, students are strongly encouraged to read the “Engineering Reflection Guidebook” that was prepared by the McMaster University faculty of Engineering. The guide which is available at https://ecampusontario.pressbooks.pub/engineeringreflectiontoolkit/, includes one module for training students on writing a reflection based on the “What? So what? Now what?” model, and another module to guide instructional teams with evaluating and providing feedback on a reflection essay.

Individual and Group Marks

To ascertain that each member of a group is contributing positively to the project, the chapter hand-ins and final report will be marked according to the individual contribution. In the proposal, each group must identify the content of each chapter and corresponding submission date (tentative). All group members must work on every chapter. With each chapter submission, every member of the team must submit their own summary of the chapter content and their percent contribution to the chapter. The percentage contribution to each chapter will be used to calculate the individual mark. Each chapter will be out of 10 with the technical content being out of 8, and the presentation and writing quality out of 2. During the course, groups may resubmit up to 2 chapters for re-marking, however the entire group must agree that a chapter can be resubmitted. Chapters resubmitted for evaluation must include a Response to Instructors Comments section that clearly notes the

comments/suggestions/corrections of the TA/Faculty and how they are addressed in the revised chapter. The Chapter submission date can be revised up to 2 days before submission.

Chapter Due Dates
Chapters are to be submitted on Mondays and there will generally be a one-week turnaround for marking and feedback. The last day to submit chapters for grading and feedback is Monday November 24th, 2025, for the Fall term, and Monday February 23rd, 2026, for the Winter term. The final report is due by noon on March 13, 2026 (tentative).

Groups
All students will form self-selected groups of 6 people to a total of 18 groups. Proposals are due on the 25th of September and meetings for each group will be set to take place between the groups and the instructors/starting on the 1st of October. All groups are to be formed by September 5th, anybody not in a group will be assigned to one. If a student has not contacted their group by September 12th, 2025, he/she will be asked to withdraw from this course. Each group will be assigned a TA to advise the members while developing their proposal.

Chapter Completion
All groups are expected to successfully complete and submit 4 out of 10 chapters by the end of the Fall term. If 4 chapters were not submitted by the due date, a 10% penalty will be imposed on the final report.

Submissions
All the submissions are to be done electronically through A2L.

3. SCHEDULE

WEEK 1	Introduction	Form groups
WEEK 2-13	Optimization Sustainability Structural Information Transfer Municipal Information Transfer Geotechnical Information Transfer Building Science Information Transfer Pavement Information Transfer	Project proposal Self reflection reports Project Report Chapters Mini Presentations

4. ASSESSMENT OF LEARNING	WEIGHT %
Self reflection (2 reports)	5% (equally weighted)
Proposal (report and meeting)	5%
Chapter Hand-ins	50% (individual grades; chapters equally weighted)
Final Poster presentation and/or project Video	10% (equally weighted)
Final Design Project Report	30% (individual grades)
Late projects (Final project report) will be subject to a 10% per day penalty.	

5. LEARNING OUTCOMES

Upon completion of the course, students will be able to:
1) Understand how to apply their undergraduate knowledge to a contemporary design.
2) Design an engineering solution to a challenging contemporary problem, within realistic constraints and utilizing appropriate standards.
3) Use project management and teamwork skills to deliver a solution within time constraints.

4) Deliver a professional presentation appropriate to a broad audience.

5) Demonstrate effective written technical communication skills through final project reports.

6. COMMUNICATIONS

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

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*.

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.

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.

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, user names for the McMaster e-mail 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.

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.

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.

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 to make arrangements with a Program Coordinator. For further information, consult McMaster University's *Academic Accommodation of Students with Disabilities* policy.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

In the event of an absence for medical or other reasons, students should review and follow the McMaster Student Absence Form Policy (MSAF Policy).

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.

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.

EQUITY, DIVERSITY, AND INCLUSION

The Faculty of Engineering is committed to creating an environment in which students of all genders, cultures, ethnicities, races, sexual orientations, abilities, and socioeconomic backgrounds have equal access to education and are welcomed and treated fairly. If you have any concerns regarding inclusion in our Faculty, in particular if you or one of your peers is experiencing harassment or discrimination, you are encouraged to contact the Chair, Associate Undergraduate Chair, Academic Advisor or the Equity and Inclusion Office.

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