Civil Engineering
CIVENG 4X06B
Design and Synthesis Project in Civil Engineering
Winter 2024

Instructor Information

Peijun Guo
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Office Hours:
TBD

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TBD

Class Times

Lectures: Mo We Th 5:30PM - 6:20PM

Labs: Mo We 3:30PM - 4:20PM

Class Format

In Person

Course Dates: 01/08/2024 - 04/10/2024
Units: 3.00
Course Delivery Mode: In Person
Course 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. Three lectures, two hours of design studio; both terms Prerequisite(s): CIVENG 3G04, CIVENG 3L03, CIVENG 3J04 and registration in a final level of a Civil Engineering program or permission from the Department Co-requisite(s): CIVENG 4N04

Instructor-Specific Course Information

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.

Important Links

- Mosaic
- Avenue to Learn
- Student Accessibility Services - Accommodations
- McMaster University Library
- eReserves

Course Learning Outcomes

- Understand how to apply their undergraduate knowledge to a contemporary design.
- Design an engineering solution to a challenging contemporary problem, within realistic constraints and utilizing appropriate standards.
- Use project management and teamwork skills to deliver a solution within time constraints.
- Deliver a professional presentation appropriate to a broad audience.
- Demonstrate effective written technical communication skills through final project reports.

Graduate Attributes

The Canadian Engineering Accreditation Board (CEAB) is a division of Engineers Canada and is responsible for accrediting undergraduate engineering programs across Canada. Accreditation by the CEAB ensures that the engineering programs meet a national standard of quality and cover essential educational requirements. Graduate Attributes are a set of qualities and skills that the CEAB expects engineering graduates to possess. These attributes are a benchmark for the learning outcomes of accredited engineering programs. This section lists the Graduate Attribute Indicators associated with the Learning Outcomes in this course.

3.1 Selects appropriately from relevant knowledge base to plan appropriate data collection methods and analysis strategies.

4.1 Defines the problem by identifying relevant context, constraints, and prior approaches before exploring potential design solutions.

4.2 Explores a breadth of potential solutions, considering their benefits and trade-offs as they relate to the project requirements.

4.3 Develops models/prototypes; tests, evaluates, and iterates as appropriate.

4.4 Justifies and reflects on design decisions, giving consideration to limitations, assumptions, constraints and other relevant factors.

5.1 Evaluates engineering tools, identifies their limitations, and selects, adapts, or extends them appropriately.

6.2 Manages interpersonal relationships, taking leadership responsibilities as needed.

8.2 Integrates appropriate standards, codes, legal and regulatory factors into decision making.

9.2 Evaluates the social impact of engineering activities, including health, safety, legal, cultural, and other relevant factors, and identifies uncertainties in decisions.

10.2 Applies the principles of equity and universal design to ensure equitable treatment of all stakeholders.

11.1 Applies economic principles in decision making.

12.2 Seeks and acquires appropriate external information as required, including showing awareness of sources of information and ability to critically evaluate them.

Lab 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". 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 Health and Safety. The Lab Safety Handbook is available here, as well as on A2L.

It is also your responsibility to follow any specific Standard Operating Procedures (SOPs) provided for some of the experiments and the laboratory equipment. A laboratory-specific set of rules can also be added to ensure that students fully understand laboratory safety rules that are in place prior to their first session.

Course Schedule

A weekly breakdown of the course schedule

Week	Topic	Assessment
1-13	Optimization Sustainability Structural Information Transfer Municipal Information Transfer Geotechnical Information Transfer Building Science Information Transfer Pavement Information Transfer Water and Environmental Information Transfer	Project proposal Self reflection reports Project Report Chapters Mini Presentations Peer evaluations

Required Materials and Texts

Textbook Listing: https://textbooks.mcmaster.ca

No specific textbook is required.

Course Evaluation

Self reflection (2 reports)	5%
Confidential peer evaluation (2 evaluations)	5%
Proposal (report and meeting)	5%

Chapter Hand-ins	35% (individual)
Final Poster presentation and/or project Video	10%
Final Design Project Report	40%

Late projects (Final project report) will be subject to a 10% per day penalty.

Course Evaluation Details

Student self-reflection

Every student is required to submit a self-reflection report on the last Friday of September 2023 and January 2024. 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 largely be individually marked. In the proposal, each team must identify the number of chapters and submission date for each chapter. 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 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 7, and the presentation and writing quality out of 3. For the final report, of the 40%, 10% of the grade will be a group mark which reflects the overall quality of the report (every member of the team will receive the same group mark) and 30% will be individual marks based upon their contribution to the chapters. During the course, groups may resubmit up to 25% of the total number of chapters for re-marking, however the entire group must agree that a chapter can be resubmitted. Chapters resubmitted for evaluation and included in the final report must include a Response to Instructors Comments section after the revised chapter 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 27th, 2023, for the Fall term, and Monday February 26th, 2024, for the Winter term. The final report is due by noon on March 15, 2024.

Groups

All students will form self-selected groups of 5-6 people to a total of 18 groups. Proposals are due on the 28th of September and meetings for each group will be set to take place between the groups and the instructors/starting on the 28th of September. All groups are to be formed by September 11th, anybody not in a group will be assigned to one. If a student has not contacted their group by September 18th, 2023, 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.

Progress Reports and Chapter Completion

Every group is required to submit a progress report on the last Friday of the month indicating the progress status of their project by noting the percent completion of each chapter. It is required that all groups have no less than 40% of the total number of chapters completed by the end of the Fall term. If 40% of the chapters have not been submitted there will be a penalty on the final report which is 4% of the 40% assessment weight of the report (it is equivalent to 10 marks deducted from a report marked out of 100).

Submissions

All the submissions are to be done electronically through A2L.

Grading Scale

The McMaster 12 Point Grading Scale

Grade	Equivalent Grade Point	Equivalent Percentages

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

Generative AI: Use Prohibited

Students are not permitted to use generative AI in this course. In alignment with McMaster academic integrity policy, it “shall be an offence knowingly to … submit academic work for assessment that was purchased or acquired from another source”. This includes work created by generative AI tools. Also state in the policy is the following, “Contract Cheating is the act of “outsourcing of student work to third parties” (Lancaster & Clarke, 2016, p. 639) with or without payment.” Using Generative AI tools is a form of contract cheating. Charges of academic dishonesty will be brought forward to the Office of Academic Integrity.

APPROVED ADVISORY STATEMENTS

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-proceduresguidelines/

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.

Courses with an On-line Element

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn, 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.

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 to contact the Equity and Inclusion Office.

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.

Academic Advising

For any academic inquires please reach out to the Office of the Associate Dean (Academic) in Engineering located in JHE-Hatch 301.

Details on academic supports and contact information are available from:

https://www.eng.mcmaster.ca/programs/academic-advising

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 Policy on Requests for Relief for Missed Academic Term Work.

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.

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, Avenue to Learn and/or McMaster email.

Turnitin.com

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.