

Western University - Faculty of Engineering
Department of Civil and Environmental Engineering
CEE 4478 – Case Studies in Civil Engineering - Course Outline 2024

This course introduces students to selected engineering case studies covering a range of disciplines and problems. Through studying and analysing the outcomes of these engineering projects, students will be exposed to the complex and multidisciplinary challenges facing civil engineers on a daily basis. The effects of a number of non-technical issues, e.g. legal, managerial, financial, environmental, ethical, political and social, will be addressed. Students will be familiarized with well-known engineering failures, the lessons to be learned from these cases and the subsequent changes in the engineering profession. A participative mode of learning will be used where all students will be expected to actively contribute during group discussion. The students will also prepare their own case study based on information collected, and present their findings in both written and oral formats.

Calendar Copy:

Students will examine a number of "cases" in which some critical engineering decisions must be made. These decisions may be influenced by technical, social, economic, political, legal, ethical, health and safety or regulatory considerations. (0.5 course).

Contact Hours:

3 online lecture hours/week (recommended extra personal study: 3 hours). Attendance at the lectures is mandatory. Lectures are Thursdays from 1:30-4:30 p.m. and are primarily case study in format.

Pre-requisites: Completion of third year of the 'Civil and Environmental Engineering Program'.

Corequisites: None.

Anti-requisites: None.

Note: It is the **student's responsibility** to ensure that all Prerequisite and Corequisite conditions are met or that special permission to waive these requirements has been granted by the Faculty. It is also the **student's responsibility** to ensure that they have not taken a course listed as an Anti-requisite. The student may be dropped from the course or not given credit for the course towards their degree if they violate the Prerequisite, Corequisite or Anti-requisite conditions.

Instructor:

Kevin L. McGuire M. Eng., P. Eng., PMP, email: kmcgui5@uwo.ca. *Administrative Support:* Room 3005. Office hours: listed in Owl. Timing and day of the week are flexible and by appointment only.

Textbook:

Custom Course Material containing the various case studies will be available on OWL. Other relevant material will be distributed throughout the term.

Units:

SI units will be used in lectures and examinations.

Specific Learning Objectives:

Course participants will:

- learn how to assess information presented or collected to identify key points.
- learn how to develop key arguments and decisions, and present them in written and oral formats.
- develop problem-solving skills whilst working alone and in groups.
- develop an understanding of the impact of engineering on non-technical issues and vice-versa.
- develop an appreciation of the impact of engineering solutions in a global and societal context.
- be introduced to well-known engineering failures and decision making processes, and thereby understand the effects they have had on the engineering profession.
- be made aware of the need for life-long learning in engineering practice.
- learn to prepare a case study based on a review of the literature, collection of data, interpretation and analysis, and group/personal discussion.

General Learning Objectives:

E=Evaluate, T=Teach, I=Introduce (Advanced Level)

Problem Analysis		Teamwork	E	Ethics and Equity	E
Investigation		Communication	E	Economics and Project Management	E
Design		Professionalism	E	Life-Long Learning	I
Engineering Tools		Impact on Society	E		

Evaluation:

The final course mark will be determined as follows:

	Individual	Group
Written analysis of case studies (group effort in best 8 of 9 cases*)		16%
Participation in discussions (individual mark**)	16%	
Group case study project (group effort***)		24%
Presentation (individual mark)	4%	
Final Exam (individual mark)	40%	
	60%	40%

*if all 9 are submitted.

**if all 9 attendances are recorded this will also be best 8 of 9

***A small portion of this mark will reflect participations in the student presentations week 12&13

Notes: (a) **Students who have failed this course previously must repeat all components of the course.**

No special permissions will be granted enabling a student to retain laboratory, assignment or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted.

(b) Should any of the course requirements conflicts with a religious holiday that a student wishes to observe, the student must inform the instructor of the conflict no later than two weeks before the scheduled test.

(For further information on Accommodations for Religious Holidays see:

[accommodation_religious.pdf\(uwo.ca\)](#)

- (c) **Students must pass the final examination to pass this course.** Students who fail the final examination will be assigned the aggregate mark, as determined above, or 48%, whichever is less.
- (d) With over 70 students, it is unreasonable to expect that each student in the class can participate in the discussion with the guest lecturer each week. And so there is a schedule. When scheduled to participate in the discussion, as detailed below, students must engage with the guest typically via questioning, and in a manner that is professional, insightful, and constructive with respect to the broader group discussion.
- (e) With respect to the participation in discussion, students must qualify for each scheduled contribution by being in attendance for the lecture by the speaker or by their classmates as the case may be (student presentations require engagement too). If attendance is missed without up front accommodation, a “zero” will be recorded for the student grade that week, regardless of their possible contribution (as in the case of being scheduled to participate in the forums on a given week, and doing so, but then not following up to attend the speaker event).
- (f) With respect to participation in classroom discussions, students are always encouraged to engage our speakers, even if it may not be a week in which a grade for the contribution can be obtained.

Method of Contribution Towards your Participation in Discussions - 16% of your Grade													
Group #	Classroom Leadership for the Week												
	Professor	Guest 1	Guest 2	Guest 3	Guest 4	Guest 5	Reading Week	Professor	Guest 6	Guest 7	Guest 8	Students	Students
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Group 1	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 2	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 3	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 4	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 5	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 6	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 7	None	Classroom	Forums	Classroom	Forums	Classroom	None	Forums	Classroom	Forums	Classroom	Optional	Mandatory
Group 8	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 9	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 10	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 11	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 12	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 13	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 14	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional
Group 15	None	Forums	Classroom	Forums	Classroom	Forums	None	Classroom	Forums	Classroom	Forums	Mandatory	Optional

- (g) Your scheduled means of contribution to participation in discussions is shown here (A larger more legible version is available in the Course Overview section of Owl):

1. Examinations:

The final examination will be **CLOSED BOOK: Programmable calculators and other external sources of information, including books, notes and crib sheets, are NOT permitted.**

2. Weekly Assignments – (Written Analysis of Case Studies):

Each weekly assignment must be turned in to Owl by the group (one copy only please) at the beginning of each class. Group membership will be assigned by the instructor. A weekly minutes template will be distributed and students are expected to detail individual contributions fairly and accurately. Late assignments will receive a grade of zero. Extensions are to be negotiated with the course instructor, not the teaching assistants.

3. Use of English:

In accordance with Senate and Faculty Policy, students may be penalised up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with

CEE 4478 Syllabus rev 02 January 2, 2024

the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

4. Group Case Study Project:

Details to be announced in class.

5. Individual Presentations:

Each group member must participate as a presenter for at least 4 minutes duration in a group presentation during the course. The evaluation of the oral presentation shall be based on the organization and completeness of the presentation, the content, the use of time available, the quality of visual aids, the cleanliness of the technical co-ordination, and the quality of the oral delivery.

Plagiarism Checking:

The University of Western Ontario uses software for plagiarism checking. Students are required to submit their Laboratory Reports in electronic form to Turnitin.com for plagiarism checking.

Cheating:

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning. For more information on scholastic offenses, please see:

[cheating2018.pdf \(uwo.ca\)](#)

Generative Artificial Intelligence:

In this course, we recognize the potential benefits of generative AI to support your learning; however, there are some instances where the use of generative AI will detract from learning of key knowledge and skills, particularly skills where it's important for you to accomplish a task unassisted. Each assignment will clearly outline the expectations and restrictions around generative AI use for that assignment. There may be some learning activities and assignments where you are encouraged to use generative AI and there may be others where AI-use is not allowed. However, there is no requirement in this course to use generative AI for the completion of any task. Any time you do use generative AI, you will be expected to properly cite its use, similar to the use of any other resources. You will also be responsible for addressing any inherent biases, inaccuracies, or other issues in the output. Violating the acceptable use of generative AI stated in your assignment requirements may result in academic penalties as laid out in Western University's academic integrity and scholastic offensive policies.

Attendance:

Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course. The instructor may use a variety of methods to take attendance during each class including but not limited to roll call, ungraded pop quiz, evaluation of quantity of participation contributions in the guest lecture discussion, or other as the instructor sees fit for the weekly circumstances. In any given week, the instructor may choose to waive attendance, in which case full attendance may be

recorded for the entire cohort, or alternatively, the number of attendance requirements may be reduced by one as the instructor sees fit.

Accessibility:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at 661-2111 x 82147 for any specific question regarding an accommodation.

Conduct:

Students are expected to arrive on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the room until being invited in by the Instructor. Please turn off your cell phone before coming to a class, tutorial, quiz or exam. On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <https://www.uwo.ca/univsec/pdf/board/code.pdf>

Use of Recordings:

Any remote learning sessions for this course, which may occur from time to time as a consequence of best serving the needs of our guest speakers for example, will be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals under special circumstances. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

Sickness and Other Problems:

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented (see attached). The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

For more information concerning medical accommodations, please see:

[Academic Accommodation - Faculty of Engineering - Western University \(uwo.ca\)](#)

The illness of a single individual on the team will not generally result in an extension being granted to the full group for their weekly assignment. If multiple students are sick, it is documented, and accommodation has been sought for each ill student well in advance of the deadline, then consideration will be made for allowing a reasonable extension to the weekly assignment. This would also hold true for the Group Case Study Project.

Accommodation:

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

Notice:

Students are responsible for regularly checking their email, course website (<https://owl.uwo.ca>) and notices posted outside the Civil and Environmental Engineering Department Office

Consultation:

Students are encouraged to discuss curriculum material problems with their teaching assistant and/or instructor in informal tutorial sessions. Zoom hours can be arranged for the students to see the instructor and teaching assistants.

Course breakdown:

Natural Science = 0% ; Engineering Science = 30% ; Engineering design = 30% ; Complementary Studies = 40%; Mathematics = 0%.

The document “INSTRUCTIONS FOR STUDENTS UNABLE TO WRITE TESTS OR EXAMINATIONS OR SUBMIT ASSIGNMENTS AS SCHEDULED” is part of this course outline.

Document Control: This syllabus was created, and distributed by Kevin McGuire P. Eng.

Rev 00 – Released January 1, 2024 to the undergraduate associate-chair for CEE for consideration.

Rev 01 – Released January 2, 2024 - Final exam pass clause reinserted at direction of AUC

Rev 02 – Released January 3, 2024 – Made weekly flipped assignments Best 8 of 9 in grade roll up.

Rev 03 - Released January 10, 2024 – Participation Contribution methods formalized

Rev 04 – Released January 11th, 2024 – 8 of 9 compromise on individual contribution added. Clarified the impact of individual illness on group work.