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 learnt from these cases and 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 lecture hours/week (recommended extra personal study: 3 hours). Attendance at the lectures is mandatory. Lectures are Wednesdays from 3:30-6:30 p.m. and are primarily in the case study in format.

Course delivery with respect to the COVID-19 pandemic
Although the intent is for this course to be delivered in-person, the changing COVID-19 landscape may necessitate some or all of the course to be delivered online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

When deemed necessary, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western’s Remote Proctoring website at: https://remoteproctoring.uwo.ca.

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.
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:**
Gregory A. Kopp, PhD, PEng, email: gakopp@uwo.ca. *Administrative Support:* SEB 3005.
Office hours: Thursdays 10:00 - 11:00 or by appointment

**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. CS1
- learn how to develop key arguments and decisions and present them in written and oral formats. CS2, CS3
- develop an understanding of the impact of engineering on non-technical issues and vice-versa. EE1, PR2
- develop an appreciation of the impact of engineering solutions in a global and societal context. PR2, PR3
- be introduced to well-known engineering failures and decision-making processes, and thereby understand the effects they have had on the engineering profession. PR2, PR3, EE4
- be made aware of the need for life-long learning in engineering practice. PR3
- learn to prepare a case study based on a review of the literature, collection of data, interpretation and analysis, and group/personal discussion. EE2, CS3

**General Learning Objectives:**

<table>
<thead>
<tr>
<th>E=Evaluate, T=Teach, I=Introduce (Advanced Level)</th>
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<tbody>
<tr>
<td>Problem Analysis</td>
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<td>Investigation</td>
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<td>Design</td>
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<td>Engineering Tools</td>
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**Evaluation:**
The final course mark will be determined as follows:

<table>
<thead>
<tr>
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<th>Individual</th>
<th>Group</th>
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<tbody>
<tr>
<td>Written analysis of case studies</td>
<td>16%</td>
<td>16%</td>
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<tr>
<td>Participation in Zoom discussions</td>
<td>16%</td>
<td>16%</td>
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<tr>
<td>Group case study project</td>
<td>4%</td>
<td>24%</td>
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<tr>
<td>Presentation (individual mark)</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Final Exam (individual mark)</td>
<td>40%</td>
<td>40%</td>
</tr>
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**CEE 4478, January 10, 2022**
Note:  

(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: https://www.eng.uwo.ca/undergraduate/academic-consideration-for-absences.html)

1. Examinations:

The final examination will be AN OPEN BOOK EXAM: Calculators or other external sources of information, including books, notes or crib sheets, are 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) prior to 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 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)
**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.

**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: http://academicsupport.uwo.ca/accessible_education/index.html

**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. 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: http://www.uwo.ca/univsec/board/code.pdf

**Use of Recordings:**
All the remote learning sessions for this course 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 if they have any problems that could affect their performance in the course. The student should seek advice from the instructor regarding how best to deal with the problem. Failure to notify the instructor (or as soon as possible thereafter) will have a negative effect on any appeal.

For more information concerning academic consideration for absences please visit: https://www.eng.uwo.ca/undergraduate/academic-consideration-for-absences.html

**Accommodation:**
Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. https://www.eng.uwo.ca/undergraduate/academic-consideration-for-absences.html

**Notice:**
Students are responsible for regularly checking their email, course website (https://owl.uwo.ca).
Consultation:
Students are encouraged to discuss problems with their teaching assistant and/or instructor in tutorial sessions. Zoom hours will be arranged for the students to see the instructor and teaching assistants. Other individual consultation can be arranged by appointment with the appropriate instructor.

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