University of Victoria
HEAT Course Outline

CIVE480C: SPECIAL TOPICS: Bridge Engineering

Territory Acknowledgement

We acknowledge and respect the Lək̓ʷəŋən (Songhees and Xʷsepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Course Dates

CRN(s):	Section A02 CRN: 31651
Term:	2025
Course Start:	2025-05-07
Course End:	2025-08-16
Withdrawal with 100% reduction of tuition fees:	2025-05-19
Withdrawal with 50% reduction of tuition fees:	2025-06-08
Last day for withdrawal (no fees returned):	2025-07-02

Scheduled Meeting Times (M=Mon, T=Tue, W=Wed, R=Thu, F=Fri)

Section:	Location:	Classes Start:	Classes End:	Days of week:	Hours of day:	Instructor:
A02	ECS 124	2025-05-07	2025-08-01	F	09:30-12:20	Mina Iskander

Name: **Mina Iskander**
Sections: A02 (CRN: 31651)
Office:
Phone:
Email: minasamiaziz at gmail dot com
Office Hours: **TBD**

Teaching and Tools

Method of course delivery: in-person (Classroom participation is expected). Students are expected to have access to Microsoft Excel to perform calculations during class and for assignments.

Prerequisites & Co-requisites

Prerequisites:
CIVE 351 – Design of Steel and Timber Structures and CIVE 352 – Reinforced Concrete Structural Design

4th year undergraduate or graduate students and familiarity with analysis and design of reinforced concrete and steel structures.

TA Information

TA Name	E-mail	Office
Behnam Salehabadi	behnam.salehabadi1@gmail.com	TBD

Accommodation Statement

The University of Victoria is committed to creating a learning experience that is as accessible as possible. If you are registered with the Centre for Accessible Learning and anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me. If you are a student with a disability or chronic health condition, you can meet with a CAL advisor to discuss access and accommodations.

How to contact CAL: https://www.uvic.ca/accessible-learning/students/how-to-register/index.php.

Concession Statement

The university recognizes its responsibility to offer academic concessions to students whose ability to complete course requirements is interrupted by unexpected and unavoidable circumstances or conflicting responsibilities.

Review the Academic Concession Regulation (https://www.uvic.ca/calendar/future/undergrad/index.php#/policy/HJjAxiGO4?bc=true&bcCurrent=11%20-%20Academic%20Concessions&bcGroup=Undergraduate%20Academic%20Regulations&bcItemType=policies) and web site (https://www.uvic.ca/students/academics/academic-concessions-accommodations/request-for-academic-concession/index.php#ipn-undergraduate-requests-for-academic-concession).

Textbook

There are no required textbooks for this course.

Codes and Standards:

1. CSA S6:19 - Canadian Highway Bridge Design Code (CHBDC)
2. Bridge Standards and Procedures Manual vol. 1, Supplement to CHBDC S6:19

Other References:

1. AASHTO LRFD Bridge Design Specifications
2. CSA S16 - Design and Construction of Steel Structures (CISC, Canadian Institute of Steel Construction Handbook)
3. CSA A23.3 - Design of Concrete Structures
4. CPCI Design Manual - Precast and Prestressed Concrete
5. https://www.aisc.org/nsba/design-and-estimation-resources/steel-bridge-design-handbook/

Course Objectives

Loading, analysis and design of common types of bridges according to CHBDC *(Canadian Highway Bridge Design Code)* focusing on beam-type bridges: steel and reinforced/prestressed concrete bridges. Basics of seismic design, bridge health monitoring, rehabilitation and strengthening of bridges may be discussed should time permit.

Learning Outcomes

At the end of this course, students will be able to:

- Recognize various bridge components and design loads according to CHBDC S6
- Utilize influence lines to determine internal shear and bending moment at any section of a bridge
- Perform Live Load analysis of simply supported bridges using the simplified method
- Design bridge concrete deck-slab and understand concepts of prestressing
- Understand the principles of designing for constructability

- Develop awareness of basic seismic principles in bridge engineering

Assessment

Component	Date	Weight
Assignments:	Multiple	20%
Midterm Exam 1:	June 13	20%
Midterm Exam 2:	July 18	20%
Final Exam:	TBD	40%

Submissions

Regarding Submission of Assignments: It is very important that you write your design calculations neatly, clearly, and with enough details so that another engineer (your instructor or TA) can review them easily. ➢ Present the main deliverables and important results first, followed by detailed calculations. ➢ Make sure your calculations are nicely organized and easy to follow. ➢ Present the summary of all your results at the end of your solution to each problem. ➢ Write your name and student number on the cover page.

Course Schedule

Tentative Course Schedule

Week No.	Subject
1	Introduction to bridge engineering
2	Bridge Loading
3	Influence Lines
4	Live Load Placement and Simplified Analysis (S6)
5	Examples: Bridge Loading and Simplified Analysis
6	Overview of Bridge Decks, Midterm Exam 1
7	Design of Deck Slabs
8	Prestressed Concrete Bridges
9	Composite Steel Girder Bridges
10	Fatigue
11	Design for Constructability, Midterm Exam 2
12	Bridge Barriers, Bearings and Joints
13	Seismic Principles in Bridges

Notes

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Academic Calendar.

- There are no supplemental midterm exams. In case of missing an exam because of illness or an emergency reason, supporting documents should be submitted to the instructor within one week after the exam date. If the reason and document are found acceptable, the midterm exam marks will be transferred to the final exam.
- Only non-programmable calculators can be used in exams. Students will be informed of exam rules several days before the exam.
- Lectures are delivered in person and active participation throughout the course is highly encouraged.

COURSE LECTURE NOTES Unless otherwise noted, all course materials supplied to students in this course are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or

copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

SUPPLEMENTAL EXAM There will be no supplemental examination for this course.

Grading System

The University of Victoria follows a percentage grading system in which the instructor will submit grades in percentages. The University will use the following Senate approved standardized grading scale to assign letter grades. Both the percentage mark and the letter grade will be recorded on the academic record and transcripts.

F	D	C	C+	B-	B	B+	A-	A	A+
0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100

Grades	GPA	Description
A+, A, A-	9, 8, 7	**Exceptional**, **outstanding** or **excellent** performance. Normally achieved by a minority of students. These grades indicate a student who is *self-initiating*, *exceeds expectation* and has an *insightful* grasp of the subject matter.
B+, B, B-	6, 5, 4	**Very good**, **good** or **solid** performance. Normally achieved by the largest number of students. These grades indicate a *good* grasp of the subject matter or *excellent grasp in one area balanced with satisfactory grasp in the other areas*.
C+, C	3, 2	**Satisfactory**, or **minimally satisfactory**. These grades indicate a *satisfactory performance and knowledge* of the subject matter.
D	1	**Marginal Performance**. A student receiving this grade demonstrated a *superficial grasp* of the subject matter.
F	0	**Unsatisfactory performance**. Wrote final examination and completed course requirements;

General Information

Note to Students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Assistant to the Chair to set up an appointment.

Discrimination and Harassment Policy (GV0205)

Elders' Voices - The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being. https://www.uvic.ca/services/indigenous/students/programming/elders/index.php

Electronic devices in labs and lectures: No unauthorized audio or video recording of lectures is permitted.

Electronic devices in midterms and exams: Calculators are only permitted for examinations and tests if explicitly authorized and the type of calculator permitted may be restricted. No other electronic devices (e.g. cell phones, pagers, PDA, etc.) may be used during examinations or tests unless explicitly authorized.

Faculty of Engineering and Computer Science, University of Victoria Standards for Professional Behavior It is the responsibility of all members of the Faculty of Engineering and Computer Science, students, staff, and faculty, to adhere to and promote standards of professional behavior that support an effective learning environment that prepares graduates for careers as professionals... You are advised to read the Faculty of Engineering and Computer Science document *Standards for Professional Behavior* which contains important information regarding conduct in courses, labs, and in the general use of facilities.

Engineering and Computer Science Students' Society The Engineering and Computer Science Students' Society (ECSS) serves all students registered in an Engineering and Computer Science degree program. For information on ECSS activities, events and services navigate to https://onlineacademiccommunity.uvic.ca/ess/.

Attendance

Students are expected to attend all classes in which they are enrolled. An academic unit may require a student to withdraw from a course if the student is registered in another course that occurs at the same time.
In some courses students may be assigned a final grade of N or debarred from writing final examinations if they have failed to satisfy a minimum attendance requirement set by an instructor for lectures, laboratories, online course discussions or learning activities, tutorials, or other learning activities set out in the course outline. Instructors in such

courses must inform students in the course outline of any minimum attendance requirement and the circumstances under which they will be assigned a final grade of N or debarred from final examinations. Students who are absent, late or cannot attend an entire class because of illness, an accident or family affliction should report to their instructors as soon as possible. Academic Concessions.
An instructor may refuse a student admission to a lecture, laboratory, online course discussion or learning activity, tutorial or other learning activity set out in the course outline because of lateness, misconduct, inattention or failure to meet the responsibilities of the course set out in the course outline. Students who neglect their academic work may be assigned a final grade of N or debarred from final examinations.
Students who do not attend classes must not assume that they have been dropped from the course by an academic unit or an instructor. Courses that are not formally dropped will be given a failing grade, students may be required to withdraw and will be required to pay the tuition fee for the course. Read policy in the Academic Calendar.

Academic Integrity

Academic integrity is intellectual honesty and responsibility for academic work that you submit individual or group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offences.

The responsibility of the institution Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

The responsibility of the student Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your instructor. Depending on the severity of the case, penalties include a warning, a failing grade, a record on the student's transcript, or a suspension.

It is your responsibility to understand the University's policy on [Academic Integrity] (https://www.uvic.ca/calendar/future/undergrad/index.php#/policy/Sk_0xsM_V?bc=true&bcCurrent=08%20-%20Policy%20on%20Academic%20Integrity&bcGroup=Undergraduate%20Academic%20Regulations&bcItemType=policies)

Equality

This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning (formerly the Resource Centre for Students with a Disability) located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Resources for students:

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

a. UVic Learn Anywhere UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.
b. Library resources
c. Indigenous student services (ISS)
d. Centre for Academic Communication (CAC)
e. Math & Stats Assistance Centre (MSAC)
f. Learning Strategies Program (LSP)
g. Community-Engaged Learning (CEL)
h. Academic Concession - link to policy
i. Academic Accommodation - link to website
j. Academic accommodation & access for students with disabilities - Policy AC1205

k. Student groups and resources: link
l. Student wellness: link
m. Ombudsperson:link

University statements and policies:

a. University Calendar - Section "Information for all students"
b. Accommodation of Religious Observance - link to policy
c. Student Conduct – link to website
d. Non-academic Student Misconduct – link to website
e. Academic Accommodations and Accessibility – link to website
f. Diversity / EDI – link to VPAC commitment
g. Sexualized Violence Prevention and Response: link
h. Discrimination and Harassment Policy