

**Winter 2025**

**Terrain Analysis**

**Department of Civil and Environmental Engineering**

**CIVE 5801**

## **Teaching Team**

### **Instructor:**

Elena Zabolotnii

elenazabolotnii@cunet.carleton.ca

EDC 4532

Office hours: Tue 11:30am – 12:30pm

**TA(s): not available**

## **Course Description and requirements**

### **1) Course schedule**

\*Please refer to the [Public Class Schedule](#) for the most recent information

### **2) Course description**

This course covers the surficial geology of Canada using aerial photo interpretation of landforms. Topics include: Glaciated geology. Active glaciers. Drainage and erosion patterns. Alluvial and colluvial landforms. Shorelines. Bedrock. Permafrost terrain and thermokarst. Peatlands. Applications in civil and environmental engineering.

### **3) Precluded courses**

N/A

### **4) Prerequisites and recommended knowledge**

N/A

### **5) Learning Outcomes**

The students are expected to understand the glaciation processes and their role and mechanisms in shaping glaciated landscape. They will learn to identify landforms shaped by glacial and associated processes. They will learn to evaluate glaciated landscape for civil and environmental project applications.

### **6) Graduate Attributes**

N/A

## **7) Accreditation Units**

N/A

## **8) Text book(s)/Learning Materials and their costs**

### **Mandatory materials:**

J.D. Mollard. Landforms and Surface Materials of Canada. A Stereoscopic Airphoto Atlas and Glossary. PrintWest, Regina, Canada. ISBN 0-9681002-0-1.

The textbook is mandatory in this class along with the stereoscopes used for it. The textbook and stereoscopes will be provided in the class time, and two textbooks are reserved for class students at the MacOdrum library. Textbooks and stereoscopes can be purchased through the Department of Civil and Environmental Engineering (Payal Chadha) through prepay at the cost of CAD292.67 tax and shipping inclusive.

### **Additional References**

- N/A

## 9) Topics and tentative plan

<b>Date:</b>	<b>Seminar Topic:</b>	<b>Due (in class):</b>
January 8	Chapter 1 - Introduction	
January 15	Chapter 2 – Active glaciers, glacially sculpted terrain, depositional landforms of mountain glaciation, sea and lake ice	
January 22	Chapter 3 - Till landforms derived from continental glaciation	
January 29	Chapter 4 – Ice-contact stratified drift landforms	Term paper topic
February 5	Chapter 5 – Outwash and inwash landforms	
February 12	Chapter 6 – Glaciolacustrine, lacustrine, marine and glaciomarine landforms	Term paper abstract
February 19		
February 26	Chapter 7 – Fluvial landforms	
March 5	Chapter 9 - Shorelines	
March 12	Chapter 12 - Peatlands	
March 19	Chapter 13 – Permafrost terrane	Term paper
March 26	Student presentations	
April 2	Final examination	

## 10) Evaluation and marking scheme

Term Paper:	30%
Term paper presentation:	30%
Final Examination:	40%

### a) Final Examination

- i) **Final exams are for evaluation purpose and will not be returned to students.**
- ii) The exam will be held in class on the day of the last lecture.
- iii) Open book.
- iv) Final Exam Weight: 40%

ii) Deferred Final Examinations: Students who are unable to write the final examination because of extenuating circumstances, as defined in the [Academic Consideration Policy](#), may apply for accommodation by contacting the Registrar's office. Consult the [Section 4.3 of the University Calendar](#).

### b) Exam format and e-proctoring statement

The final exam will be in-person only.

### c) Additional requirements

Students who claim illness, injury, or other extraordinary circumstances beyond their control as a reason for missed term work are held responsible for immediately informing the instructor concerned and for alternate arrangements with the instructor and in all cases, this must occur no later than three (3) days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. Consult Section 4.4 of the University Calendar.

Students missing deadlines or exams due to an illness must submit a Self-declaration for Academic Considerations Form to the instructor within three (3) days. Accommodations cannot be granted more than 72 hours after the deadlines. For final exams, students must submit the self-declaration form in addition to a deferral application ([carleton.ca/registrar/deferral](http://carleton.ca/registrar/deferral)) and submit both forms to the Registrar's Office no later than 3 days after the scheduled examination or take-home due date. If an absence from an evaluation is deemed justified:

1) Term paper presentation: the weight of a justified missed assignment will be transferred onto the final exam.

2) Final exam: the student will have to consult the academic secretariat of the faculty for the procedure to follow.

### d) Term work late submission policy

Assignment and project submissions that are late by less than 48 hours will be deducted 20% of the grade. Assignments and project submissions late by more than 48 hours will receive a grade of 0%. If

assignments and/or project submissions are late due to illness, their weight can be transferred to the final examination upon receipt of appropriate documentation.

**e) Deferred term work and self declaration**

Students who claim extenuating circumstances defined in the [Academic Consideration Policy](#), as a reason for missed term work are held responsible for immediately informing the instructor concerned and for making alternate arrangements with the instructor and in all cases. This must occur no later than three (3) days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. Consult [Section 4.4 of the University Calendar](#).

**11) Academic dates**

Students should be aware of the academic dates (e.g. last day for academic withdrawal) posted on the Registrar's office web site <https://carleton.ca/registrar/registration/dates/academic-dates/>

## Academic Integrity and Plagiarism

- a) Please consult the Faculty of Engineering and Design information page about the Academic Integrity policy and our procedures: <https://carleton.ca/engineering-design/current-students/fed-academic-integrity> Violations of the Academic Integrity Policy will result in the assignment of a penalty such as reduced grades, the assignment of an F in a course, a suspension or, expulsion.
- b) One of the main objectives of the Academic Integrity Policy is to ensure that **the work you submit is your own**. As a result, it is important to write your own solutions when studying and preparing with other students and to avoid plagiarism in your submissions. The University Academic Integrity Policy defines plagiarism as “presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.” This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source.

Examples of violations of the policy include, but are not limited to:

- any submission prepared in whole or in part, by someone else or by generative AI;
- any submission prepared in whole or in part for another course or purpose (e.g., conference or journal paper, previous thesis or project in another class)
- using another’s data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- failing to acknowledge sources of information through the use of proper citations when using another’s work and/or failing to use quotations marks.

Failure to follow these rules will result in an automatic grade of 0 for the submission and may include other penalties including a final grade of “F”, at the instructor's discretion.

## Copyright

The materials (including the course outline, slides, posted notes, videos, labs, projects, assignments, quizzes, exams, and solutions) created for this course are intended for personal use only. They may not be reproduced, redistributed, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without written permission from the author(s), both during and after the semester.

## Learning and Working Environment

The University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the [Department of Equity and Inclusive Communities](mailto:equity@carleton.ca) at [equity@carleton.ca](mailto:equity@carleton.ca). We will strive to create an environment of mutual respect for all through equity, diversity, and inclusion within this course. The space which we work in will be safe for everyone. Please be considerate of everyone's personal beliefs, choices, and opinions.

## Academic Accommodations

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at **613-520-6608** or [pmc@carleton.ca](mailto:pmc@carleton.ca).

You should request your academic accommodations in the [Ventus Student Portal](#), for each course at the beginning of every term. For in-term tests or midterms, please request accommodations at least two (2) weeks before the first test or midterm. Please consult the [PMC website](#) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**Accommodation for Student Activities:** Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your

instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the [Senate Policy on Accommodation for Student Activities \(PDF\)](#).

**Pregnancy Obligation:** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the [Student Guide to Academic Accommodation \(PDF\)](#).

**Religious Obligation:** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the [Student Guide to Academic Accommodation \(PDF\)](#).

**Survivors of Sexual Violence:** As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit the [Sexual Violence Prevention & Survivor Support](#).

## Engineering Academic Advising

The [Engineering Academic Support Service](#) assists undergraduate engineering students with course selection, registration, and learning support from first-year through to graduation.

Academic Advisors Contact can be found here: <https://carleton.ca/engineering-design/current-students/undergrad-academic-support/undergraduate-advisors/>.

## Student Mental Health and Wellness

As a university student you may experience a range of mental health challenges that can significantly impact your academic success and overall well-being. Carleton's [Wellness Services Navigator](#) is designed to help students connect with mental health and wellness resources.

If you need to talk to someone from the department for more information and support with connecting to resources, you can contact the following faculty members, depending on your program. Or contact the department at [orCEEUGChair@cunet.carleton.ca](mailto:orCEEUGChair@cunet.carleton.ca).

**ACSE:** Prof. [Elie Azar](#)

Email: [Elie.Azar@carleton.ca](mailto:Elie.Azar@carleton.ca), Office: 3432 Mackenzie

**CIVE:** Prof. [Heng Khoo](#)

Email: [heng.khoo@carleton.ca](mailto:heng.khoo@carleton.ca), Office: 3364 Mackenzie

**ENVE:** Prof. [Shoeleh Shams](#)

Email: [shoelehshams@cunet.Carleton.ca](mailto:shoelehshams@cunet.Carleton.ca), Office: 4242 Mackenzie

Here is a list of on-campus and off-campus recourses:

1. **Carleton's Wellness Desk:** Located at 204A MacOdrum Library, is a space for students to learn about resources, connect with our Wellness Coordinator, and decompress during stressful times of the year. You can pop into the Wellness Desk any time during its hours of operation – no appointments necessary! <https://wellness.carleton.ca/mental-health/wellness-desk/>
2. **Carleton's Health and Counselling Services:** To book an appointment contact the main clinic by calling (613) 520-6674. If urgent, let the Patient Care Coordinator know or go in person to the main clinic (2500 Carleton Technology and Training Centre Building) and indicate that they are in crisis and need to speak to someone right away. <https://carleton.ca/health/>
3. **Residence Counselling and Wellness Service:** Counselling services specifically for students in residence. <https://carleton.ca/health/residence-counselling/>
4. **Therapy Dogs:** Carleton's therapy dogs are around campus with their owners (who are Carleton University staff and faculty) to comfort and provide support to help you thrive as a university student. <https://carleton.ca/wellness/dogs/>
5. [Emergencies and Crisis](#) and [Emergency Numbers](#)
6. **Good2Talk (1-866-925-5454):** Good2Talk is a free, confidential helpline providing professional counselling and information and referrals for mental health, addictions and well-being to post-secondary students in Ontario, 24/7/36 <https://good2talk.ca/>
7. **Empower Me:** Undergraduate students have access to free counselling services in the community through Empower Me, either in person, by telephone, video-counselling or e-counselling. **This free service is accessible 24/7, 365 days per year.** Call **1-844-741-6389 (toll free)** to make an appointment with a counsellor in the community. More information is available <https://students.carleton.ca/services/empower-me-counselling-services/>
8. **The Walk-In Counselling Clinic (off-campus community resource):** The walk-in Counselling Clinic have offices in various locations across Ottawa and the greater Champlain region that are open 7 days a week. Individuals will be assisted, with no appointment, on a first-come, first-serve basis during the Walk-in Counselling Clinic hours. The Walk-in Counselling Clinic **offers services in many languages** and is free and confidential. More information can be found at: <https://walkincounselling.com/>
9. **Distress Centre of Ottawa and Region:** Available 10am-11pm, 7 days/week, 365 days/year. **Distress Line:** 613-238-3311, **Crisis Line:** 613-722-6914 or 1-866-996-0991, **Text:** 343-306-5550. <https://www.dcottawa.on.ca/>
10. **Distress and Crisis Ontario**, Available for chat 2 pm – 2 am EST. <https://www.dcontario.org/>
11. **BounceBack Ontario (Toll-Free: 1-866-345-0224)** is a free skill-building program managed by the Canadian Mental Health Association (CMHA). It is designed to help adults and youth 15+ manage low mood, mild to moderate depression and anxiety, stress or worry. Delivered over the phone with a coach and through online videos, you will get access to tools that will support you on your path to mental wellness. <https://bouncebackontario.ca/>.



## **Term Paper and Presentation Requirements**

Students are asked to prepare a 5,000 word (+/-750 words) individual term paper on an instructor-approved subject of their choosing related to landforms that is in line with the general subject of the class.

In the two last seminars of the course, the students will present their paper in a 20-minute presentation followed by a 10-minute question period.

## **Term Paper Format**

The paper must closely follow the Canadian Geotechnical Journal's journal authors' manuscript format (see instructions to the authors). It must include an abstract, introduction, theory, findings/results, discussion and conclusions section, followed by references, appendices if applicable. The 5,000 word count applies to the whole paper excluding the appendices.

Tables and Figures: Include tables, figures and captions in the body of the term paper on the appropriate pages.

Language: the paper must follow technical writing standards.

The term paper is due on the date of the last class. Late submissions will result in a penalty of 20% on the paper grade.

## **Term Paper Grading:**

- |   |        |
|---|--------|
| 1. Adherence to formatting requirements:                  | 15/100 |
| 2. Language & style:                                      | 10/100 |
| 3. Findings/results:                                      | 25/100 |
| 4. Discussion/conclusions:                                | 30/100 |
| 5. Overall organization of information and effectiveness: | 20/100 |

## **Some advise on your term paper (optional):**

Have a clear idea about your topic before writing. Develop an outline including all sections (you can modify this later, but it is important to start early). Start filling in the results/findings section as you identify them – this is a tedious task if left to the last minute. Fill in the information in various sections as ideas come to you.

If you are facing a writer's block, convince yourself to write just one sentence a day. Once you have the sentence down, you can decide if you wish to continue or leave it for another day. Remember, we all procrastinate when it comes to papers!

### **Presentation Requirements:**

Students will present their work to their peers in the format of their choosing (examples include PowerPoint presentations, videos, combinations thereof etc). It is the student's responsibility to ensure that the chosen format will work with Zoom in the classroom environment.

There is a strict time limit of 20 minutes per presentation – no exceptions.

The presentations will be graded by the instructor (50% of the grade) and by their peers (50% of the grade).

All students must submit their grades for their peers' presentations, or lose up to 20% of their own presentation grade. Grading will be done according to the following criteria:

1. How easy is it to follow your colleague's presentation? ( /3)  
Ex. does the colleague speak clearly, is the presentation well-paced or rushed, are the visual aids effective?
2. Quality of content ( /4)  
Was the technical quality of the presentation good? Was the technical aspect treated well?  
Were the answers to questions adequate in your view?
3. Effectiveness of presentation ( /3)  
Is the content of your colleague's presentation interesting, modern, inspirational? Did you feel like you wanted to know more, or perhaps work on something related to the presented topic?

The instructor reserves the right to discard presentation grades that are too far from the median. This is done to discourage unethical and strategic grading, and encourage a fair treatment of your peers.

### **Some advise on presentations**

The 15/5 minute presentation format is typical for conferences, and you will encounter it often as grad student and professionals. In those settings, you will be judged by your peers.

This course's presentation emulates this format and is intended to prepare you for these instances.

There are several pieces of general advice addressing common mistakes in student presentations. Following some or all of these points is not mandatory, but in your instructor's opinion, it can be very helpful.

1. Do not overload your presentation with information. The rule of thumb is, one slide per 1-2 minutes – so ~10-12 slides in all. Otherwise you will not meet your time limit.
2. Do not rush your speech, do not slur your words to fit in more information, and do not overload slides. You wish to speak clearly and rather slowly! You wish to have one or two things per slide – do not have 10 graphs and paragraphs of text – no one will read that. When it comes to text in presentation slides, less is more. Remember, your peers are not familiar with your topic and there is only so much that they can comprehend in 15 minutes – this has nothing to do with how smart we are, that is just how we process new information!
3. Prepare your speaking notes in advance and rehearse. You will reach a point when you will no longer need your notes as your crutch, but preparation is key.
4. Test your presentation over Zoom to avoid technical issues AND to ensure that your text size is readable.
5. If you are shy and have trouble with public speaking, pay special attention to point (3): I promise, it helps a great deal.

**How to study for the final exam:**

This is a graduate level class. This means that we study things that have not yet been absorbed into textbooks as mainstream knowledge. This knowledge is available in good quality research papers and industry reports. Each class has a number of research papers and other reading materials posted on Brightspace. Please read them – if possible, in advance of the class. Do not leave this task to the last days before the exam – you will not be able to read this much in just a few days.