

GEG4100: Glaciology (3 credits): Iceland, Spring Semester 2026

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Course Description and Objectives

The aim of the course is to provide an introduction to glaciology, with a particular focus on field observations and measurements. The majority of the course will take place during a field trip to southern Iceland, with daily visits to explore glaciers, glacial lakes, volcanoes and previously glaciated areas. Lectures will be held ahead of time (in hybrid format, with in-person or Zoom attendance) to provide a theoretical grounding in glaciology and to provide background information for the field trips. The course will include a review of the impacts of climate change on glaciers in this region, as well as the unique interactions between volcanoes and glaciers in Iceland and associated natural hazards.

Course topics

1. Glacier dynamics
2. Glacier hydrology
3. Response of glaciers to climate change
4. Snow processes: glacier mass balance, avalanches
5. Mountain weather & climatology
6. Ice-volcano interactions and glacier lake outburst floods

Prerequisites

The course is open to anyone, although priority will be given to GEG/ENV students in their 4th year or higher. Enrollment is restricted to a maximum of 16 students due to limitations with safety and logistics. There are no particular prerequisites, but it is expected that students will have a general background in Physical Geography/Environmental Studies. Useful background courses include Geomorphology, Hydrology, Climatology, Polar Regions, Permafrost, Climate Change, Remote Sensing and Introduction to GIS.

2026 field trip schedule (start and end dates are fixed, but daily activities are subject to change due to weather)

May 22 (Fri): Fly from Canada to Keflavik airport (Reykjavik) on overnight flight, or arrive earlier in your own time

May 23 (Sat): Arrive on flight to Keflavik airport, with pickup from airport or downtown Reykjavik. Exploration of Reykjanes volcanism (<https://www.visitreykjanes.is/en/volcano-eruption/>), Thingvellir (<https://www.thingvellir.is/en/>) and Geysir geothermal field (<https://en.wikipedia.org/wiki/Geysir>). Stay at Riverside Guesthouse, Hella (<https://www.booking.com/hotel/is/guesthouse-brenna.html>).

May 24 (Sun): Hiking across Sólheimajökull Glacier (<https://www.mountainguides.is/tour/solheimajokull-glacier-walk-discovery>), and view of risks from glacial lake outburst floods. Exploration of black sand beach, columnar basalt and coastal landforms near Vik. Stay at Riverside Guesthouse, Hella.

May 25 (Mon): Ferry to Vestmannaeyjar Islands for daytrip to view volcanic landforms. Stay at Riverside Guesthouse, Hella.

May 26 (Tue): Take Superjeep to accumulation area of Mýrdalsjökull ice cap (<https://www.arcanum.is/>). Spend day on snow studies, percolation experiments, avalanche tests. Return to lowland in Superjeep at end of day. Stay at Hotel Búrfell, near Vik (<https://hotelburfell.is/>).

May 27 (Wed): Drive to Skaftafell National Park, viewing glaciers, glacial landforms, volcanic landforms and the impacts of glacial lake outburst floods. Stay at Guesthouse Gerdi, near Jökulsárlón (<https://gerdi.is>).

May 28 (Thu): Take Zodiac ride on Jökulsárlón glacial lagoon (<https://icelagoon.is/zodiac-tours/>). Exploration of glaciers around Jökulsárlón and glaciers to the east, including visit to 'Diamond Beach', viewing of icebergs, visit to large terminal moraines from previous glaciations. Stay at Guesthouse Gerdi.

May 29 (Fri): Hiking in Skaftafell National Park, ice coring on Svinafjellsjökull Glacier. Stay at Guesthouse Gerdi.

May 30 (Sat): Exploration of Kirkjubæjarklaustur region, including glacial landforms, volcanic landforms and a hike to Fjaðrárgljúfur Canyon. Stay at Hotel Eldhestar, Hveragerði (<https://hoteleldhestar.is/>).

May 31 (Sun): Hot springs/hiking in the morning. Drive to Reykjavik, and then Keflavik airport, for flights home.

- Travel/medical insurance is required for all participants
- Passports are required and must be valid for at least 3 months after your return

Costs

The cost of participating in the course can be broken down into three parts:

1. *Course fees*: these total **\$2950**, and cover all expenses while in Iceland, class such as meals (breakfast, lunch & dinner every day), accommodation in hotels, transportation, day trips, entry fees and use of specialized field equipment. These fees will be paid in two ways:
 - a. **Initial deposit of \$850 due Dec. 1, 2025 to guarantee place in class** (make cheque or money order payable to 'University of Ottawa')
 - b. **Remaining balance of \$2100** will be charged directly to your student tuition account after you have been formally enrolled for the course in March/April 2026
2. *Flights*: you are responsible for booking and paying for your own flights. Many options are available from airlines such as Icelandair, often with direct flights from Montreal and Toronto
3. *Tuition fees*: as with any University of Ottawa course, students are required to pay tuition fees to take the class. This cost will be billed to your regular tuition account.

There is no required textbook for the course. Any required readings will be available as a free PDF download.

Course assessment

A total of 5 lectures will be held in May, prior to the field trip, to provide background information and to help you develop a personal project (to be worked on in pairs). The assessment for the course is based on:

1. Completion of a personal project report summarizing an aspect of the glaciology of Iceland. Topics and suggested reading will be provided at the start of the class. Max. length 20 pages, with report due 5pm, June 15, 2026 (33% of final marks).
2. Presentation on your personal project topic to the rest of the class, and general involvement in class discussions and field measurements (33% of final marks).
3. Maintenance of a detailed field notebook of the measurements, field observations and material covered during the field trip (33% of final marks). Due 5pm, June 15, 2026

Fitness requirements, personal gear and accommodation

- Good levels of fitness are required as many hikes will be undertaken in steep terrain on glaciers
- Participants must not suffer from vertigo (severe fear of heights) as the hikes on glaciers will occasionally require the use of crampons and ice axes, occasionally over large vertical drops.
- Accommodation will be in hotels or guesthouses, with typically two people per room (single gender)
- The weather can be highly variable, with temperatures of approx. -5 to 15°C, rain and snow, intense sunshine and high winds. It will be daylight for almost 24 hrs/day during the trip.
- Good hiking boots, jackets, sunglasses and backpacks are required. All specialized field equipment (e.g., ice axes, crampons, ropes) will be provided. A full equipment list will be provided prior to departure.
- Professional Icelandic mountain guides will join us at various times. On other days Dr. Copland and Jean Bjornson will lead trips on and around glaciers. They are trained in First Aid and backcountry rescue, and will carry safety gear such as first aid kits and emergency locator beacons.

Plagiarism

- All work must be original to this course and written up individually. Students are expected to be familiar with uOttawa Academic regulation A-4 on Academic Integrity and Academic Misconduct:
<https://www.uottawa.ca/about-us/leadership-governance/policies-regulations/a-4-academic-integrity-academic-misconduct>

AI Policy

- AI may not be used to create content for any assigned work for this course, such as the personal project report. It may only be used to assist with technical corrections, such as spelling, grammar, punctuation and sentence/paragraph structure.
- If AI is used for technical corrections, then a written statement describing which AI (e.g., ChatGPT, Grammarly) was used, and how, must be provided at the end of the submitted work.