

GEOG 408 LEC01 Meteorology and Hydrology

GFC Hours 3-2

Winter 2023 classes: January 9th – April 12th

Section	Days	Time	Location
LEC 01	TR	15:30-16:45PM	ES 443
Lab 01	R	11:00-12:50PM	ES 355
Lab 02	F	2:00-3:50PM	ES 355

Instructor: Dr. Brent Else	Office: ES 340
Telephone: 403-220-2484	Email: belse@ucalgary.ca
Email communication will be through your UCalgary email address.	Office hours: by appointment

The **Department of Geography** condemns the longstanding and continued injustices against those marginalized by racism, sexism, homophobia, transphobia, classism, xenophobia, able-bodied normativity, mental health profiling, and other forms of prejudice. We are pained by the fact that injustices are unevenly borne. <https://arts.ucalgary.ca/news/anti-racism-statement>

Territorial Acknowledgement

The Department of Geography would also like to acknowledge the traditional territories of the people of the Treaty 7 region in southern Alberta. The City of Calgary is also home to Métis Nation of Alberta, Region III. <https://www.ucalgary.ca/indigenous/cultural-protocol>

Official Course Description

Atmospheric connections with the hydrological cycle, including evapotranspiration, water vapour, stability, cloud development, and precipitation. Water transport is followed through soil moisture, groundwater, and stream flow. Discussed methods focus on tracking water transport through the land-atmosphere system at various scales. Additional topics may include water quality, water resource management, and hydrology of selected landscapes.

Course Objectives

Students in this course will learn how to:

1. Understand atmospheric circulation, and how it is controlled by energy transfers and the fundamental properties of air.
2. Understand, analyze, and track the flow of water through evaporation, cloud formation, and precipitation.
3. Understand the hydrologic cycle and the water balance equation as a unifying framework for studying and managing freshwater.
4. Use various techniques to measure, model, or calculate flows and reservoirs within the hydrological cycle.
5. Identify reliable sources of scientific information, and construct knowledge from primary sources.
6. Construct and execute field sampling plans to test sound scientific hypotheses, and critically analyze sample data to generate reliable results.

Course Learning Outcomes

The Department of Geography is committed to student knowledge and skill development. The table below lists the key learning outcomes for this course, the program-learning outcomes to which they contribute, and the expected level of achievement.

Course Learning Outcomes	PLO(s)*	Level(s)**
Students should be able to explain global weather patterns	2	3
Students will be expected to solve quantitative problems through selection and manipulation of the relevant equations and basic spreadsheet skills	4,7	2
Students should be able to apply knowledge about atmospheric science into other undergraduate courses and workplace responsibilities	2,5	2
Students should be able to explain the weather conditions they are currently experiencing, wherever in the world they find themselves	5	1
Distinguish between types of water vapour; adiabatic process; atmospheric stability; cloud/precipitation formation mechanisms, and clouds	2	2
Describe the forces that act on air to create local to global wind at the surface and aloft; horizontal and vertical motions of pressure systems	7	2
Describe general circulation of atmosphere, global heat/energy transfer; jet streams; air masses; storms; climate change	7	2

*PLOs = Program Learning Outcomes: 1 = reflect and communicate diverse human-environment perspectives, 2 = identify and explain human-environment processes, 3 = implement sampling, data collection, analyses and communication methods, 4 = analyze spatial and temporal aspects of human-environment systems, 5 = employ knowledge, arguments, and methodologies for solving human-environment problems, 6 = evaluate geospatial data and manipulate it to create cartographic products, 7 = communicate geographic concepts using oral, written, graphic, and cartographic modes, and 8 = demonstrate literacy skills.

**Levels: 1 = Introductory, 2 = Intermediate, and 3 = Advanced.

Prerequisites

3 units from GEOG 211, 308

Learning Resources

There is no required textbook for this course. Readings will be posted on the D2L site.

Computing Resources

For this course, you will need access to a personal computer to download and view course materials, including pre-recorded lectures and labs. In addition, there will be computer-based labs that can be completed on home desktops but will require you to download software (HEC-HMS, a hydrologic model). Unfortunately, this software is not available for mac platforms and will require a Windows operating system or emulator. Assignments will also require you to have access to Microsoft® Office products, specifically Excel and Word.

Assessment Methods

There is no final examination scheduled by the Registrar's Office. It is not essential to pass all elements/components to pass the course as a whole.

- Lab Assignments: 50% (6 assignments @ 8.33% each)
- Quizzes: 20% (5 quizzes throughout the term; best 4 will count for 5% each)
- Exams: 30% (2 in-class exams)

Labs: There will be a series of six labs, each worth 8.33% of your final mark. You have at least 2 weeks to complete each lab exercise. The lab TA will be available during the lab periods. Lab exercises are a blend of computer-based data analysis and hands-on activities. **Some of the activities can only be completed in the lab period, so your attendance at those labs is mandatory.** Mandatory lab periods are noted in the course schedule. If you cannot attend a mandatory lab, please contact your TA in advance of the lab period to discuss alternative options.

Individual written assignments are required for each lab. Students are permitted to collaborate on labwork for this course. However each student must hand in an individual assignment that reflects their own work. Given the numerical nature of many of the assignments, this can lead to some confusion regarding plagiarism. In written questions, it is easy to ensure that responses are written “in your own words”. For mathematical problems, this can be more difficult; often there is only one correct approach to a question, and limited ways to express that approach in an assignment. In general, it is okay if two students hand in very similar answers to mathematical questions, provided they **each did the work themselves**. The line is actually quite clear: there should be **no digital files transferred between students**. Two students can be sitting next to each other working together, but that should be done on **two separate computers**, working together on **two separate documents**. To make life easier on the TA marking your assignments, you may wish to format your documents differently to make it clear that two people did the work. All lab assignments must be submitted in a D2L compatible format (i.e. .pdf or .docx).

Exams: Two exams will be held during class time, as per the schedule posted on D2L. Each exam will be worth 15% of your final mark (30% total).

Quizzes: Five quizzes will be administered throughout the term. These quizzes will be conducted at the start of the classes noted on the course schedule (available on D2L). Quizzes are 20 minutes in length. Four quizzes will be used towards your final grade (5% each, 20% of the total course). Your lowest mark on the 5 quizzes will automatically be dropped from the calculation.

Late Policy: Assignments submitted after the stated deadline will be penalized with the loss of a grade of 10% for **each day** late (including weekends). Exceptions to this policy must be discussed and confirmed with the lead instructor **in advance of the due date**. If a student fails to complete an assignment or similar set piece of work for legitimate reasons, an alternative course of action must be discussed with the lead instructor or course assistant in a timely fashion and documentation will be required as per the University Calendar.

Missed Exam/Quiz Policy: As per <https://www.ucalgary.ca/pubs/calendar/current/g-1-1.html>: A student who is absent from an in-person assessment in a course will receive a grade of zero on the assessment. If a student communicates with the instructor and explains the circumstances around the absence, the instructor may transfer the percentage weight for the assessment to another component of the course (such as the final examination), set another assessment, or make other alternative arrangements. An instructor will normally make this decision based on the information provided by the student. The instructor may ask for supporting documentation to confirm an absence.

As per <https://www.ucalgary.ca/pubs/calendar/current/m-1.html>: Students may be asked to provide supporting documentation for an exemption/special request. This may include, but is not limited to, a prolonged absence from a course where participation is required, a missed course assessment, a deferred examination, or an appeal. Students are encouraged to submit documentation that will support their situation. Supporting documentation may be dependent on the reason noted in their personal statement/explanation provided to explain their situation. This could be medical certificate/documentation, references, police reports, invitation letter, or a statutory declaration, etc. The decision to provide supporting documentation that best suits the situation is at the discretion of the student. Students cannot be required to provide specific supporting documentation, such as a medical note. Students can make a Statutory Declaration as their supporting documentation (available at ucalgary.ca/registrar). This requires students to make a declaration in the presence of a Commissioner for Oaths. It demonstrates the importance of honest and accurate information provided and is a legally binding declaration. Several registered Commissioners for Oaths are available to students at no charge, on campus, please see ucalgary.ca/registrar.

Grading System

96 – 100	A+	77 – 80	B	59 – 61	C-
90 – 95	A	71 – 76	B-	55 – 58	D+
86 – 89	A-	65 – 70	C+	50 – 54	D
81 – 85	B+	62 – 64	C	0 – 49	F

Flexible Grade Option (CG Grade): Please see: <https://www.ucalgary.ca/pubs/calendar/current/f-1-3.html>

Exams & Deferrals Please see: <https://www.ucalgary.ca/registrar/exams>

Referencing Standard

In written work presented in this class, the accepted method for referencing the work of others will be the Chicago Manual of Style: <https://www.chicagomanualofstyle.org/home.html>

Important Dates

The last day to drop this course and receive a tuition fee refund is **Thursday, January 19th, 2023**. The last day to add or swap a course for Winter 2023 is **Friday, January 20th, 2023**. The last day to withdraw from this course is **Wednesday, April 12th, 2023**. Please note that the University is closed on **Monday, February 20th** for Family Day. Term break is **February 19th – 25th**. The University is closed **Friday, April 7th** and **Monday, April 10th** for Easter.

For additional detailed course information posted by the instructor, visit the course Desire2Learn page online at <https://d2l.ucalgary.ca/d2l/home>.

Resources and Writing support

Please note writing support resources provided by the Student Success Centre <https://ucalgary.ca/ssc/resources/writing-support> and the library <https://libguides.ucalgary.ca/guides/>

University of Calgary Academic Integrity Policy

Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. The University Calendar includes a statement on the principles of conduct expected of all members of the university community (including students, faculty, administrators, any category of staff, practicum supervisors, and volunteers), whether on or off university property. This statement applies in all situations where members of the university community are acting in their university capacities.

[University of Calgary : K. Integrity and Conduct \(ucalgary.ca\)](https://ucalgary.ca/k/integrity-and-conduct)

Plagiarism, Cheating, and Student Misconduct

Academic dishonesty is not an acceptable activity at the University of Calgary, and students are **strongly advised** to read the Student Misconduct section in the University Calendar at: www.ucalgary.ca/pubs/calendar/current/k-3.html. Often, students are unaware of what constitutes academic dishonesty or plagiarism. The most common are (1) presenting another student's work as your own, (2) presenting an author's work or ideas as your own without adequate citation, and (3) using work completed for another course. Such activities will not be tolerated in this course, and students suspected of academic misconduct will be dealt with according to the procedures outlined in the calendar at: <https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-procedure>

For information on what constitutes plagiarism and how to properly cite the work of others, the Department of Geography recommends that they attend Academic Integrity workshops offered through the Student Success Centre: <https://www.ucalgary.ca/student-services/student-success/learning/academic-integrity>

Instructor Intellectual Property

Information on Instructor Intellectual Property can be found at <https://www.ucalgary.ca/legal-services/university-policies-procedures/intellectual-property-policy>

Freedom of Information and Protection of Privacy

Freedom of Information and Protection of Privacy (FOIP) legislation in Alberta regulates the return of term assessments. Term assignments will be returned to students individually, during class or during the instructor's office hours; if students are unable to pick up their assignments from the instructor, they must provide the instructor with a stamped, self-addressed envelope to be used for the return of the assignment. Grades and assignments will not be available at the Department of Geography's main office and assignments cannot be dropped off at the Department Office.

Posting of Grades and Picking-up of Assignments

Graded assignments will be returned by the instructor or teaching assistant personally during scheduled lecture or laboratory periods, unless they are made available electronically through the course D2L webpage.

Academic Accommodations

It is the student's responsibility to request academic accommodations, according to the university policies and procedures listed in the University Calendar. The student accommodation policy can be found at: <https://www.ucalgary.ca/pubs/calendar/current/b-6-1.html>

Within the first week of classes, students needing an accommodation because of a disability or medical condition should register with Student Accessibility Services [Accessibility | Home | University of Calgary \(ucalgary.ca\)](#) Students needing an accommodation based on a protected ground other than disability should communicate this need, preferably in writing to their instructor or the Department Head (email: freeman@ucalgary.ca).

Learning Technologies and Requirements

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology.

- A computer with a supported operating system, as well as the latest security and malware updates
- A current and updates web browser
- Broadband internet connection
- Optional technology: webcam (built in or external) / microphone and speaker (built in or external) or headset with microphone

Use of internet and electronic devices in class

The use of internet, laptops and devices is permitted during course activities, except during scheduled quizzes and exams. Please be considerate of your neighbors. Device usage during course activities must be relevant to course material, and in support of your learning.

Guidelines for Video Sessions

Video sessions maybe used in the event of instructor absence, for work within peer groups, or for other communication related to course obligations. To help ensure video sessions are private, do not share link or password with others via any medium, including social media platforms. Links and passwords are only intended for students registered in the course. Recordings and materials presented, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith and respect (as per the [Code of Conduct](#)). When entering video conferencing sessions, you play a role in helping create an effective, safe and respectful learning environment.

Please be mindful of how your behavior in these sessions may affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators can remove those whose names do not appear on class rosters. Non-compliance may be investigated under relevant University of Calgary conduct policies (e.g. Student Non Academic Misconduct Policy). If participants have difficulties complying with this requirement, they should email the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your sessions visit: [eLearn @ UCalgary](#)

If you are unable to attend a session, please contact your instructor to arrange an alternative activity for the missed session (e.g., to review a recorded session). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in sessions. Students will be advised by their instructor when they are expected to turn on their webcam (for group work, presentations, etc.).

The instructor may record online class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a class session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

Media Recording (if applicable)

Course lectures may be recorded for the purpose of “Lesson Capture” (see: https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP_FINAL.pdf). Any recording devices will be trained on the instructor only; efforts will be made to ensure that Students are not identifiable in the recording.

Course evaluations and student feedback

Student feedback will be sought at the end of the course through the standard University Student Ratings of Instruction (USRI) and Faculty course evaluation forms.

Accessibility

Students will generally need to be able to see the lecture (visually) in order to get all information. Courses may be video recorded with captioning to improve accessibility.

Copyright Legislation

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy>) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Act.

Wellness and Mental Health Resources

Mental health plays a pivotal role in physical health, social connectedness, and academic success and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support, or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services> and the Campus Mental Health Strategy website (<http://www.ucalgary.ca/mentalhealth/>).

Students requiring assistance are encouraged to email the **Student at Risk line** if they or others appear to need wellness assistance: sar@ucalgary.ca For more immediate response, please call: 403-210-9355 and select option #2.

Sexual Violence Policy

All members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. Please see the policy available at <https://www.ucalgary.ca/legal-services/university-policies-procedures/sexual-and-gender-based-violence-policy>

Contact Information for Student and Faculty Representation

- Student Union VP Academic 403-220-3911, suvpaca@ucalgary.ca
- Students Union Representatives for the Faculty of Arts – 403-220-3913, arts1@su.ucalgary.ca, arts2@su.ucalgary.ca, arts3@su.ucalgary.ca, arts4@su.ucalgary.ca
- Student Ombuds Office information can be found at: www.ucalgary.ca/ombuds/

Emergency Evacuation/Assembly Points

Assembly points for emergencies have been identified across campus. Assembly points are designed to establish a location for information updates from the emergency responders to the evacuees; from the evacuated population to the emergency responders. For more information, see the University of Calgary’s Emergency Management website: <https://www.ucalgary.ca/risk/emergency-management> The muster point is ICT food court.

Campus Safewalk

Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day, to any location on Campus, including the LRT station, parking lots, bus zones, and university residences. Contact Campus Security at 220-5333 or use a help phone, and Safewalkers or a Campus Security officer will accompany you to your campus destination.