

GEOGRAPHY FINAL COURSE OUTLINE: FALL 2018

GEOGRAPHY 305 H(3-2) Weather and Climate

Section	Days	Times	Location
LEC01	TuTh	14:00 - 15:15	ENG 230
LAB01	Tu	08:00 - 09:50	SS 018
LAB02	We	09:00 - 10:50	SS 018

Instructor: Shawn Marshall	Office: ES 404
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Office Hours: Weds 12:00-13:00, Thurs 12:00-13:00	

Please note: The appropriate emergency evacuation assembly point for all classes taught in Engineering is ICT Food Court, and Social Sciences is the Professional Faculties Food Court.

Official Course Description:

Physical principles of meteorology and climatology. Weather development in relation to different scales of atmospheric circulation. Elements of synoptic and dynamic climatology as determinants of characteristics and the distribution of climates. Laboratory work emphasizes North American examples.

Course Objectives:

Students will gain a basic understanding of weather and climate processes, on regional and global scales. Physical principles for the conservation and flux of energy, mass, momentum, and moisture through the Earth system will form the basis for interpreting and understanding weather systems and their patterns, as well as the essential science of global climate change. Through problem sets and lab work, students will develop quantitative skills (simple algebra, Excel spreadsheet calculations, logical reasoning, application of equations) and gain experience in how these are applied in environmental science and geography.

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-level learning outcomes (PLO) they facilitate, and the expected level of achievement.

Course Learning Outcomes	PLO(s)	Level(s)
Understand the climate system	2	3
Explain how key climate parameters give rise to global, regional, and local patterns	2	2
A first-order understanding of climate change	2	1
A quantitative understanding of weather processes	3	2

Students should be able to explain global weather patterns	2	3
Students will be expected to integrate basic principles of conservation of energy, mass and momentum to explain atmospheric phenomena	2	2
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 weather and climate through understanding of spatio-temporal process, laws, and theories and models as a function of spatial scale	2	1
List sources and sinks for the most common atmospheric gases and aerosols and appreciate the important roles of carbon dioxide, water vapour, and ozone	5	2
Distinguish between sensible and latent heat, temperature, energy and work; explain how energy is transferred as heat; first law of thermodynamics	2	2
Describe EMR and distinguish between radiation emitted by sun and earth; describe albedo and the role in climate; explain greenhouse gas effects	7	2
Describe and account for flows of energy that make up planetary energy balance, describe and account for radiative (and non) heat flows at surface	2	2
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, (3) Advanced.

Prerequisites – Geography 211.

Please note: Students will need high-school math. Experience with Excel spreadsheets (calculations, graphing) will be beneficial, but will also be taught in the labs.

Learning Resources

Required textbook:

Ross, S.L., *Weather and Climate: An Introduction*, 2nd Ed. (2017). Oxford University Press, Canada. Paperback version. The First Edition will suffice.

Grading (Weighting)

Quizzes (best 4 of 5 @ 7%):	28 %
Midterms (2 @ 15%):	30 %
Labs/Assignments (6 @ 7%):	42 %

There will be no final examination for this course.

An overall passing grade on the quizzes and midterms (at least 29 out of 58) is required for the student to pass the course as a whole.

Grading System

The grading system will follow the following:

93–100	A+	74–78	B	60–63	C-
86–93	A	70–74	B-	55–60	D+
82–86	A-	67–70	C+	50–55	D
78–82	B+	63–67	C	0–49	F

These grades map onto the official grading scheme of the university (see [F.1.1 Undergraduate Grading System](#) in the University Calendar):

A+	4.00	Outstanding performance
A	4.00	Excellent performance
A-	3.70	Approaching excellent performance
B+	3.30	Exceeding good performance
B	3.00	Good performance
B-	2.70	Approaching good performance
C+	2.30	Exceeding satisfactory performance
C	2.00	Satisfactory performance
C-	1.70	Approaching satisfactory performance.
D+	1.30	Marginal pass. Insufficient preparation for subsequent courses in the same subject
D	1.00	Minimal Pass. Insufficient preparation for subsequent courses in the same subject.
F	0.00	Failure. Did not meet course requirements.

Human subjects

Students in the course will not participate as subjects or researchers on human subjects.

Supplementary Fees

There are no supplemental fees.

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

SUPPLEMENTAL INFORMATION

Writing across the Curriculum

Writing skills are not exclusive to English courses and, in fact, should cross all disciplines. The university supports the belief that throughout their university careers students should be taught how to write well, so that when they graduate their writing abilities will be far above the minimal standards required at entrance. Consistent with this belief, students are expected to do a substantial amount of writing in their university courses and, where appropriate, faculty members can and should consider quality of writing as a factor in the evaluation of student work. The services provided by Writing Support Services can be utilized by all undergraduate and graduate students who feel they require further assistance: www.ucalgary.ca/ssc/writing_support/overview.

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: www.ucalgary.ca/access/accommodations/policy.

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf.

Students needing an accommodation based on a protected ground other than disability should communicate this need, preferably in writing, to the Department Head (email: geograph@ucalgary.ca).

Principles of Conduct

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. All members of the university community have a responsibility to familiarize themselves with the principles of conduct statement, which is available at: www.ucalgary.ca/pubs/calendar/current/k.html.

Plagiarism, Cheating, and Student Misconduct

The University of Calgary is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect.

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: www.ucalgary.ca/pubs/calendar/current/k-5.html.

Internet and electronic communication device information

There is no restriction on the use of laptops and tablets in class if they are used to take notes or find information relevant to the class, and if there is no disturbance or distraction of other students or the instructor. Phones must be turned off during class, unless you have previously identified yourself to the instructor as a health care or law enforcement professional. The use of any calculators and/or devices during examinations will be allowed.

Freedom of Information and Protection of Privacy

Freedom of Information and Protection of Privacy (FOIP) legislation in Alberta disallows the practice of having students retrieve assignments from a public place, such as outside an instructor's office, the department office, etc. 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.

Posting of Grades and Picking-up of Assignments

Graded assignments will be returned by the instructor or teaching assistant personally during schedule lecture or laboratory periods, unless they are made available electronically through the course D2L webpage. Grades and assignments will not be available at the Department of Geography's main office.

Faculty of Arts Program Advising and Student Information Resources

Have a question, but not sure where to start? The Faculty of Arts Students Centre is your information resource for everything in Arts! Drop in at SS 102, call us at 403-220-3580, or email us at ascarts@ucalgary.ca. You can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate>, which provides detailed information about common academic concerns.

For guidance on course registration (add, drop, swap), information about paying fees, and assistance with your Student Centre, contact Enrolment Services at 403-210-7625 or visit them at the MacKimmie Block.

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/

Wellness and Mental Health Resources

The University of Calgary recognizes the pivotal role that student mental health plays 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/>).

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.

USRI Surveys

At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference, so please participate in USRI surveys.