

## GEOGRAPHY FINAL COURSE OUTLINE: FALL 2020

### GEOGRAPHY 303 GFC HOURS (3-0)

#### Introduction to Climate Change

Section	Meeting time	Location
LEC 01	01	Web Based Course

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#### Official Course Description

Examination of current environmental issues related to physical geography, including topics such as climate change, energy and sustainable resource development, weather extremes, and natural hazards. The course uses contemporary topics to introduce fundamental principles of physical and environmental geography while highlighting societal impacts and influences.

#### Course Objectives

Students will learn the fundamentals of the physical climate system and the underlying science of global climate change on anthropogenic timescales. By the end of the course, students will be able to discuss and analyze how climate change impacts a broad spectrum of societal and environmental systems, and the role of domestic and international science policies in addressing climate change. Students will understand and be able to distinguish between natural and anthropogenic climate change processes, climate forcing and feedbacks, and climate change science, policy, and politics. Students will be able to apply their understanding to critically analyze media articles and web content concerning climate change.

#### Online Meeting Schedule

Section	Meeting Time	Meeting Dates
LEC 01	N/A	None – all asynchronous

#### 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)**
LO1. Students should be able to explain the essential physical, chemical, and biological processes that govern Earth's climate.	2	1
LO2. Students should be able to explain natural vs. anthropogenic influences on Earth's climate, and the nuanced superposition of these processes.	2, 5	2
LO3. Students should be able to quantitatively assess and reflect on ways in which human activity produces greenhouse gases.	1, 2, 4	1
LO4. Students should be able to explain how IPCC and UNFCCC processes work and the way that climate science feeds into climate policy.	2, 4, 5	1
LO5. Students should be able to critically assess and discuss societal and policy issues concerning future climate change.	1, 2, 8	2

LO6. Students should be equipped to critically evaluate public and media discussions on climate change science.	1, 8	2
LO7. Students should be able to perform simple calculations and analyses with spreadsheet-based climate data and theoretical equations.	3, 4	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:** No prerequisites required. Students should be comfortable with high-school level mathematics.

### Learning Resources

Required text: Burch, S.L. and S.E. Harris, 2014. *Understanding Climate Change: Science, Policy and Practice*. University of Toronto Press, ISBN: 978-1-4426-1445-1.

Recommended reading: Foer, J.S., 2019. *We are the Weather: Saving the Planet Begins at Breakfast*. Farrar, Straus and Giroux, New York.

Helpful resource/supporting text: Dessler, A., 2016. *Introduction to Modern Climate Change*, 2nd Edition. Cambridge University Press. ISBN: 978-1-1074-8067-4.

### 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
- Webcam (built in or external)
- Microphone and speaker (built in or external) or headset with microphone
- Broadband internet connection

### Grading (Weighting)

Course content is modular, with course deliverables associated with each module. Following is a list of the course modules, with the associated assignments/evaluation criteria detailed below. In each case, the weekly Zoom meeting is an optional ‘office hour’ where the instructor will be available for questions or discussion of the weekly course material. These sessions, on Thursday evenings, will be recorded and made available on D2L for those that cannot attend at that time.

In readings listed below, “Chapter \*” refers to the Burch and Harris textbook. Web resources will be provided for each module in addition to the foundational materials in the textbook.

Module Dates	Module Topic	Readings
September 8-11 Zoom Meeting: Sept 10, 5-6 pm	1. <i>Introduction to Climate Change</i> weather vs. climate; recent climate change; overview of the UNFCCC and IPCC	Chapter 1 Online readings
September 14-25 Zoom Meeting: Sept 17, 5-7 pm	2. <i>Fundamentals of Earth’s Climate System</i> atmosphere, ocean, cryosphere, biosphere; the carbon cycle; climate system dynamics	Chapters 2, 5 Online readings

Sept 28 - Oct 2 Zoom Meeting: Oct 1, 5-7 pm	3. <i>Earth's Energy Budget</i> albedo; atmospheric radiation; sensible and latent heat; solar variability	Chapter 3, pp. 58-69, 79-84 Chapter 4, pp. 85-108
October 5-16 Zoom Meeting: Oct 8, 5-7 pm	4. <i>Climate Change Past, Present, and Future</i> climate forcings and feedbacks; climate models; paleoclimate; IPCC future scenarios	Chapter 3, pp. 70-78 Chapters 7, 8 IPCC (2013) Summary
October 19-30 Zoom Meeting: Oct 22, 5-7 pm	5. <i>Climate Change Impacts</i> IPCC projections; changing weather, oceans, and impacts on society; adaptation strategies	Chapters 9,10 Online readings
November 2-13 Zoom Meeting: Nov 5, 5-7 pm	6. <i>Climate Policies</i> mitigation strategies; geoengineering; the UNFCCC; national policies; carbon pricing	Chapter 6 Online readings
November 16-27 Zoom Meeting: Nov 19, 5-7 pm	7. <i>The Sociology of Climate Change</i> social psychology; denialism and the climate change discourse; climate change myths	Foer (2019) Online readings
Nov 30 - Dec 4 Zoom Meeting: Dec 3, 5-7 pm	8. <i>Moving Forward</i> environmental ethics; social justice; sustainability and development options	Chapter 11 Foer (2019)

## Assignments

Modules 1 to 7 each have an assignment, due at 17:00 on the Monday following the module. Assignments are to be submitted via dropbox. Marks associated with each assignment are indicated in brackets (**x**), followed by the associated learning outcome [LO\*]. More detail on the assignment and rubrics will be provided on D2L at the beginning of each module. Modules and assignments are all to be done on your own time and from home (or wherever you care to work online).

### *Term Project: Climate Change Reflections*

In addition to the assignments for each module, you will assemble a 'climate change reflection journal' for the semester. Starting on Sept. 18 and continuing until Dec. 4, put together an online journal with weekly entries that include a few thoughts on (a) something you learned this week, that you did not know before, (b) something you have a question about, based on this week's material, and (c) a photo or image of what climate change means to you, with a brief description or caption explaining how this represents climate change and how it relates to you. These will be viewable by all in the class on the D2L discussion board and is worth 20% of your mark, based on participation, relevance/ alignment with the course material, and evidence of critical thinking. **(20)** [LO3, LO5, LO6] *Due: December 11*

### *Module 1: Introduction to Climate Change*

Work with a spreadsheet of Canadian weather data over the last 50 years to complete a few calculations and graphs and consider the differences between weather, climate variability, and climate change. **(5)** [LO7, LO1] *Due: September 14*

### *Module 2: Fundamentals of Earth's Climate System*

Online carbon calculator: document your carbon-intensive activities and estimate the amount of CO<sub>2</sub> that you produce in a typical week. **(10)** [LO3, LO7] *Due: September 28*

### Module 3: Earth's Energy Budget

Calculations to explore Earth's energy budget: effects of albedo, the strength of the Sun, and greenhouse gases on Earth's average temperature. **(5)** [LO7, LO2, LO1] *Due: October 5*

### Module 4: Climate Change Past, Present, and Future

Reflection: Briefly summarize a period in Earth's history where the climate was different from today. What does this tell us about the future? **(10)** [LO2, LO1] *Due: October 19*

Online quiz, Modules 1-4, open from **Oct 12, 08:00 to Oct 16, 18:00. (10)** [LO1, LO2]

### Module 5: Climate Change Impacts

Reflection: Choose a potential climate change impact (positive or negative) and discuss how it is likely to affect your life. Repeat this for a scenario but assuming that you live in a tropical, coastal region. **(10)** [LO5, LO1] *Due: November 2*

### Module 6: Climate Policies

Analysis of Canada's federal and provincial carbon tax policies and reflection of your personal carbon footprint. Starting with your carbon calculations from Module 2, but extending this to the full year (2020), estimate: (a) how much CO<sub>2</sub> you emit per year, (b) how much you are paying in carbon tax, and (c) how much of a carbon tax rebate you will receive from the provincial or federal government. **(10)** [LO4, LO3] *Due: November 16*

### Module 7: The Sociology of Climate Change

Media analysis. Analyze an online news article on climate change or climate policy based on an analysis of bias, motive, scientific content and validity, and its relation to the course material. **(10)** [LO6, LO5, LO2, LO1] *Due: November 30*

### Module 8: Moving Forward

Online quiz, Modules 5-7, open from **Dec 1, 08:00 to Dec 4, 18:00. (10)** [LO4, LO5, LO1]

## Summary

Module assignments:	60%
Term project (journal):	20%
Two online quizzes:	20%

Late assignments will be assessed a 10% penalty per day

Students are not required to pass all components of the course to pass the course as a whole.

There is no final examination for the course.

## 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	0–50	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.

In the event that a student is unable to complete any of the course requirements on schedule, some of the assessment criteria can be waived, subject to a valid excuse. There will be no makeup assignments in this case, but the weight assigned to other course evaluation criteria will be proportionally increased.

## Supplementary Fees

Not applicable

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

## SUPPLEMENTAL INFORMATION

### 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](http://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](http://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://ucalgary.ca/policies/files/policies/student-academic-misconduct-procedure.pdf>

### **Instructor Intellectual Property**

Information on Instructor Intellectual Property can be found at <https://www.ucalgary.ca/policies/files/policies/Intellectual%20Property%20Policy.pdf>

### **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.

### **Human subjects**

Not applicable.

### **Guidelines for Zoom Sessions**

Zoom is a video conferencing program that will allow us to meet at specific times for a "live" video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published with 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 Zoom or other video conferencing sessions (such as MS Teams), 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 Zoom sessions visit: <https://elearn.ucalgary.ca/guidelines-for-zoom/>.

If you are unable to attend a Zoom 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 Zoom 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 Zoom 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 Zoom session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

### **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. Grades and assignments will not be available at the Department of Geography's main office.

### **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/policies/files/policies/student-accommodation-policy\\_0.pdf](https://www.ucalgary.ca/policies/files/policies/student-accommodation-policy_0.pdf)

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](http://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 their instructor or the Department Head (email: [david.goldblum@ucalgary.ca](mailto:david.goldblum@ucalgary.ca)).

### **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/policies/files/policies/acceptable-use-of-material-protected-by-copyright-policy.pdf>

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**

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/>).

### **Contact Information for Student and Faculty Representation**

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

**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.