

University of Guelph - Department of Geography, Environment and Geomatics
Course Description – Winter 2024

GEOG * 2110 – CLIMATE & THE BIOPHYSICAL ENVIRONMENT (0.5 Credits)

Instructor: Ze'ev Gedalof (zgedalof@uoguelph.ca)

Office Hours: Tuesday and Thursday, Noon – 1:00; Wednesday 3:00 – 4:00 Hutt 356 (HUTT 356)

Class Meetings: Tuesday, Thursday 10:00 – 11:20 MCLN 102

Graduate Teaching Assistants: Charlie Ballantyne (01 and 05)
David Pashinsky (03 & 06)
Antonina Struminski-Bodden (02 & 04)

GTA Office / Office Hours: TBD

Service Dog: Sadly None This Year



PREREQUISITE

GEOG*1300 or GEOG*1350

REQUIRED TEXT

Ruddiman, W. (2013). *Earth's Climate: Past and Future*. 3rd Edition. Freeman.

The second edition is acceptable, but page numbers and chapters are slightly different.

There is also an eBook available from the publisher for a greatly discounted price; [see here for details](#). I will put one copy on reserve at the library (two if I can find another).

OVERVIEW

This course is the second in a sequence of four related courses in Physical Geography. The first course (GEOG*1300/1350) laid the foundations with an introduction to the processes and resulting patterns in the physical environment. This course (GEOG*2110) will examine the history of the Earth's climate, the important patterns of climatic variability, the role that people have played in modulating the Earth's climate, and the challenges and opportunities that ongoing climatic change will pose. The remaining courses in the sequence include GEOG*3110, *Biogeography*, which provides a detailed overview of biogeography – the study of the distribution of plants and animals across the Earth's surface, and GEOG*4110, *Environmental Systems Analysis*, – which synthesizes ideas from biogeography, hydrology, geomorphology, and climatology.

OBJECTIVES

- To learn and critically evaluate the basic principles and tools of paleoclimatology.
- To develop literacy in climatological concepts as they apply to current environmental issues.
- To learn basic quantitative techniques for the analysis of climatic data.

APPROACH

Each topic will be covered through a combination of readings, lectures, discussions, in-class exercises, and laboratory assignments.

EXPECTATIONS

Because class discussions and written assignments will be based on the assigned readings, students are encouraged to have done the appropriate readings prior to the start of each topic. Discussions may

involve students being called on to read prepared answers to questions on the readings. All assignments and exam questions will be based on text readings, lectures, labs, and class discussions.

I do not make my PowerPoint files available on CourseLink. There are many reasons for this, but it boils down to two main considerations: You learn more if I don't provide them; and much of the material I present is copyrighted and I am not allowed to distribute it outside of the classroom.

POLICY ON ELECTRONIC DEVICES

The use of digital devices (phones, tablets, laptops, etc.) for any purpose other than note-taking is not permitted during class time unless you are sitting where no other students can see your screen. This is because the science shows that you distract the people around you more than you distract yourself and that's just not fair to them. [See here for details.](#)

COURSE EVALUATION

In-class tests (2)	30%
Laboratory Exercises (8)	40%
Final Exam	30%

LABORATORY SESSIONS

Attendance at your scheduled laboratory session is expected. All assignments must be submitted via CourseLink *by the beginning* of the next scheduled laboratory session in which you are registered (usually one week following when it was assigned). Also, the TAs have been instructed *not* to reteach material that they covered in the lab during their office hours – though they and I are available to clarify details that you may have missed. All labs are held in Hutt 240B.

Late assignments will be penalized at a rate of 10% of the value of the lab per day. Extensions must be requested in advance, and will be evaluated by the TAs or myself on a case-by-case basis. Additional detailed information on assignments, midterms, final exam Instructor or Department Policy on Late or Missed Assignments is available in the Undergraduate Calendar

MIDTERMS AND FINAL EXAM

There are in-class midterms on Feb 8th and March 12th. There is a final exam on April 11th. (Room TBA). The final exam is cumulative, but will emphasize material after midterm #2.

COMMUNICATION

This course uses CourseLink as the primary tool for communication and distribution of course material.

Following university regulations, all email correspondence will be sent to your University of Guelph email address. I normally respond to student inquiries during my office hours. I do not normally reply to messages from off-campus email addresses (indeed, the University forbids it). Only messages and postings that are appropriately professional will be responded to. For example, I do not normally answer to emails that begin “Hey,” or that include texting lingo. I’m too old for that.

PROVISIONAL COURSE SCHEDULE

Dates for labs, tests, and exams are firm. Otherwise, the following schedule should be assumed to be provisional depending on how long it takes to get through the course material. This is the second time I have taught the course with this edition of the text, and the first time on a Tuesday/Thursday schedule, so I’m still working out the fine details.

Week	Date	Topic	Reading	Lab
1	09-Jan-24	Course intro		No Labs
	11-Jan-24	Climate science	Ch. 1	
2	16-Jan-24	Climate today*	Ch. 2	1. Measuring Climate
	18-Jan-24	Climate archives & models	Ch. 3	
3	23-Jan-24	CO2 and Climate	Ch. 4	2. The Carbon Cycle
	25-Jan-24	Plate techtonics	Ch. 5	
4	30-Jan-24	Greenhouse climate	Ch. 6	3. Orbital Climate Variability
	01-Feb-24	Greenhouse to icehouse	Ch. 7	
5	06-Feb-24	Astronomical controls	Ch. 8	No Labs
	08-Feb-24	Quiz # 1		
6	13-Feb-24	Insolation & monsoons	Ch. 9	4. Milankovitch Theory
	15-Feb-24	Insolation & ice sheets	Ch. 10	
	20-Feb-24	Reading Week		No Labs
	22-Feb-24	Reading Week		
7	27-Feb-24	Orbital controls on CO2 and CH4	Ch. 11	5. Deglaciation pt. 1
	29-Feb-24	Interactions, feedbacks & mysteries	Ch. 12	
8	05-Mar-24	The last glacial maximum	Ch. 13	6. Deglaciation pt. 2
	07-Mar-24	The last deglaciation	Ch. 14	
9	12-Mar-24	Quiz # 2		No Labs
	14-Mar-24	Millennial oscillations	Ch. 15	
10	19-Mar-24	Humans and preindustrial climate	Ch. 16	7. Preindustrial Climate
	21-Mar-24	The last millennium	Ch. 17	
11	26-Mar-24	Climate since 1850	Ch. 18	8. Climate Teleconnections
	28-Mar-24	The last 150 years	Ch. 19	
12	02-Apr-24	Future climatic change	Ch. 20	No Labs
	04-Apr-24	Reserved for lost time or Q&A		
	11-Apr-24	Final Exam 8:30-10:30 Room TBA		

The Fine Print (This Stuff Matters!):

University of Guelph Policy Statements:

E-mail Communication

As per university regulations, all students are required to check their @uoguelph.ca e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration.

Drop Date

The last date to drop one-semester courses, without academic penalty, is Friday April 5, 2024. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar.

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email accessibility@uoguelph.ca or see the [SAS website](#).

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The [Academic Misconduct Policy](#) is detailed in the Undergraduate Calendar.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.