Classes: Monday, Wednesday, Friday 2:30 – 3:20  
In-person with health and safety protocols in effect for on-campus activities.

Instructor: Dr. Brown (laura@uoguelph.ca)  
Office Hours: Thursday via Zoom 1:30 - 3:30

Labs: both in-person and online, see CourseLink  
Graduate Teaching Assistants: Rachel (ryoung07@uoguelph.ca) & Kelly (kwildfon@uoguelph.ca) &

GTA Office Hours: by appointment via Microsoft Teams

Prerequisites: GEOG*1300 or GEOG*1350

REQUIRED TEXT

The Second Edition is acceptable, but page numbers and chapters are slightly different. An ebook is also available from the publisher for a significantly discounted price; see here for details.

CALENDAR DESCRIPTION
"The interrelationships between the atmosphere, lithosphere, hydrosphere, and biosphere to produce distinct physical landscapes (climates, soils, vegetation). Emphasis on the role of climate and the flows of energy, water, and biogeochemicals."

OVERVIEW
This course is the second in a sequence of four related courses in Physical Geography. The first-year courses (GEOG*1300/1350) laid the foundations by introducing the processes and resulting patterns in the physical environment. This course examines the history of the Earth's climate, patterns of climatic variability, people's role in changing the Earth's climate, and the challenges and opportunities that ongoing climatic change will pose. The remaining two courses in this sequence include GEOG*3110, which provides a detailed overview of biogeography – the study of the distribution of plants and animals across the Earth's surface. The final course in the sequence is GEOG*4110 Environmental Systems Analysis, which synthesizes biogeography, hydrology, geomorphology, and climatology concepts.

LEARNING OBJECTIVES
This course aims to introduce and enhance the University of Guelph's learning objectives and the Department of Geography, Environment & Geomatics. Specifically, in this course, students will:

- Develop a comprehensive literacy of climatological concepts applicable to current
environmental issues.
- Critically and independently evaluate diverse sources of knowledge and approaches pertinent to the basic principles and tools of paleoclimatology and contemporary climate
- To learn and apply the fundamental quantitative techniques for the analysis of climate data
  - Develop EXCEL skills for data analysis and presentation

CourseLink Page
There is a course webpage on CourseLink, GEOG*2100 (01) W22 – Climate and the Biophysical Environment. To access our class webpage, use your central account ID and password. You use the same login ID and password to access your University of Guelph e-mail and WebAdvisor. CourseLink can be accessed from the University's homepage, and I bookmark it in my browser for easy access.

On the CourseLink page, you will find class announcements, lecture notes, lab assignments, weekly quizzes, discussion forums, grades, and our Zoom class link.

Overview of Course Content and Organization
Dates for labs and tests 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 first time I have taught the course, so I'm still working out the fine details.

<table>
<thead>
<tr>
<th>Wk.</th>
<th>Date</th>
<th>Topics</th>
<th>Readings</th>
<th>Lab Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 10 - 16</td>
<td>Introduction to Course Climate science and Earth's climate system</td>
<td>Chapter 1 &amp; 2 to pg. 38</td>
<td>Excel Self-guided</td>
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<tr>
<td>2</td>
<td>Jan. 17 - 23</td>
<td>Sources of climate data, climate models</td>
<td>Chapter 2 pg. 38 on &amp; 3</td>
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<tr>
<td>3</td>
<td>Jan. 24 - 30</td>
<td>CO₂ in rocks and Climate, Plate tectonics</td>
<td>Chapter 4 &amp; 5</td>
<td>Lab 1</td>
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<tr>
<td>4</td>
<td>Jan. 31 - Feb. 6</td>
<td>Greenhouse to Icehouse</td>
<td>Chapter 6 &amp; 7</td>
<td>Lab 1: due</td>
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<tr>
<td>5</td>
<td>Feb. 7 - 13</td>
<td>Orbit and solar radiation and Monsoons</td>
<td>Chapter 8 &amp; 9</td>
<td>Lab 2</td>
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<tr>
<td>6</td>
<td>Feb. 14 - 20</td>
<td>Insolation and Ice sheet growth and decay, Tracking atmospheric gases</td>
<td>Chapter 10 &amp; 11</td>
<td>Lab 2: due</td>
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<tr>
<td></td>
<td>READING WEEK</td>
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<tr>
<td>7</td>
<td>Feb. 28 - Mar. 6</td>
<td>Midterm Exam Interactions within the climate system and feedbacks</td>
<td>Chapter 12</td>
<td>Lab 3</td>
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<tr>
<td>8</td>
<td>Mar. 7 - 13</td>
<td>Glacial Max., Fire and Ice</td>
<td>Chapter 13 &amp; 14 to pg 276</td>
<td>Lab 3: due</td>
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<tr>
<td>9</td>
<td>Mar. 14 - 20</td>
<td>Deglaciation, Millennial Oscillations</td>
<td>Chapter 14 276 on &amp; 15</td>
<td>Lab 4</td>
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<tr>
<td>10</td>
<td>Mar. 21 - 27</td>
<td>Preindustrial climate, last 1000 years</td>
<td>Chapter 16 &amp; 17 to pg. 345</td>
<td>Lab 4: due</td>
</tr>
<tr>
<td>11</td>
<td>Mar. 28 - Apr. 3</td>
<td>ENSO, proposed causes CC, since 1850</td>
<td>Chapter 17 pg 34 on &amp;18</td>
<td>Lab 5</td>
</tr>
<tr>
<td>12</td>
<td>Apr. 4-10</td>
<td>Recent warming and future Climate</td>
<td>Chapter 19 &amp; 20</td>
<td>Lab 5: due</td>
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</tbody>
</table>

We will cover each unit using a combination of lectures, textbook readings, and discussions.
There are five 1-hour lab sessions that students must attend.
EXPECTATIONS
Students are expected to participate in class and take notes from the textbook readings and the lectures to supplement the posted material. If you miss classes for any reason, it is your responsibility to get the notes from one of your classmates.

COURSE NOTES
I will post the slides I use in my micro-lectures on CourseLink so you can follow along and take notes.

COURSE EVALUATION
The final grade will be assessed from Weekly Review Quizzes completed online (15%), five Lab Assignments (5% each, 25% total), and two tests, a Midterm (25%) and the Final exam (35%). Quizzes are based on information presented in lectures and discussed in class. The midterm is an online test in week seven and covers the lecture material presented in the first half of the course. The final exam is a 2 hour written exam focused primarily on the second half but has some cumulative content and a cumulative lab section.

In summary:
Labs 25% Start week of Jan. 24
Mid-term 25% on-line test – Feb. 28
Final Exam 35% in-person Apr. 18 – Room TBA

To pass the course, students must obtain an overall average of 50% in the combined mid-term and final exams.

Students with a documented conflict for any tests need to see me at least two weeks before to arrange an alternative time. There is no guarantee that this will be accommodated, but ensuring that you address the issue several weeks in advance will certainly assist the process.

Weekly Review Quizzes – worth 15%, completed online
The weekly review quizzes are an incredible opportunity for students to review and 'test' themselves on the relevant material quickly. These quizzes, in total, are worth 15% of the final grade in the class. They are used to incentivize engagement with the course material one more time. So, if you skim the assigned readings before class, participate in class, take helpful notes on lecture material, supplement lecture material from the textbook, and finally review your notes each week, that is approximately six points of engagement with the material. Adding the quiz makes it seven points. These points of engagement with the material are vital to an in-depth and comprehensive understanding of complex concepts in GEOG*2110. So, the quizzes might feel like extra work – and they should – because the whole point was to get you to engage with the material one more time. Furthermore, the quiz
questions help me gauge student comprehension and usually reflect the most important or challenging ideas and concepts covered during that week. Finally – quiz questions are often re-used on the exams – so in case you need one more reason to pay attention to them, they will likely help you out with the tests.

The lowest three quiz grades are dropped before the Quiz component of your final grade is calculated. I partly do this to cover instances where quizzes are missed due to losing track of time and missing the deadline, computer or internet issues, or brief illness. Therefore, there are no extensions or second attempts.

The quizzes are available from Friday 8 pm to the following Monday 2 pm.

**Lab Assignments – 5% each, 25% total**

These assignments are an opportunity for you to demonstrate that you understand key concepts. More details about these assignments will be presented at the beginning of each scheduled lab period by your GTA. Your lab assignments are due one week after your scheduled lab before midnight. For example, suppose you are in Section 101. In that case, your labs are scheduled for Wednesday at 3:30, and your lab is due the following Wednesday before midnight.

Your assignments must be submitted through Dropbox on CourseLink in PDF format. Late assignments (without prior approval by your GTA) will be penalized at a rate of 25% of the assignment's value per day. This course uses Turnitin to help encourage academic integrity.

Extensions must be requested in advance and evaluated by the GTAs 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

Your GTA handles all lab-related questions and grading.

**Midterm exam– worth 25%, completed online**

The midterm is scheduled for Monday, Feb. 28th, during our regularly scheduled class time. It will be an online exam in the Quizzes section, written anywhere with a stable Internet connection. If you do not have your own laptop, I recommend borrowing one from the library. DO NOT attempt the exam on a cell phone as there will be diagrams to label and past students who disregarded this advice regretted it.

The exam will start promptly at 2:30 pm, and you will have 50 minutes to complete all 50 questions and submit your exam. The questions will be a mix of multiple-choice, multi-answer, fill-in-the-blanks, matching and short answers. The material covered includes all the lectures before reading week and the associated chapters from the textbook. Each exam will be composed of randomized questions drawn from a test bank. For example, from a pool of 5 questions covering heat transfer processes, 1 question is randomly drawn for each exam.

This is not designed as an open book or open internet exam. Therefore, you won't have time to look up the answers. This textbook is used for our class because of the excellent student resources such as the Key Learning Concepts Review sections at the end of each chapter and the Study Area. In the Study Area, you'll find chapter quizzes. Use the questions in these quizzes and the chapter review section as exam questions.
Final exam – worth 35%, written in-person

The final exam is a hand-written in-person exam scheduled for April 18 from 7:00 -9:00pm. The on-campus location is usually announced in week 11 of the semester. The questions will be a mix of multiple-choice, fill-in-the-blanks, and short answers. The material covered on the final exam focuses primarily on the second half of the course. Still, there is a cumulative component because the material from all 5 labs is covered.

COMMUNICATION

This course uses CourseLink, Teams and Zoom as the primary tools for communication and distribution of course materials.

All e-mail correspondence will be sent to your University of Guelph e-mail address following university regulations. I usually respond to student inquiries within 24-36 hours during University Business hours. I also do not reply to messages from off-campus e-mail addresses because they are often spam or phishing scams (indeed, the University forbids it). Keep in mind this is a professional environment, and your messages should reflect this. For example, I do not normally answer e-mails that begin "Hey," or "Yo Prof" or include texting lingo.

University of Guelph Policy Statements:

E-mail Communication
As per university regulations, all students must regularly check their <uoguelph.ca> e-mail account: e-mail is the official communication route between the University and its students.

When You Cannot Meet a Course Requirement
If you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or a designated person, such as a GTA) 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
One semester-long courses must be dropped by the end of the last day of classes; two-semester courses must be dropped by the last day of classes in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.

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

Accessibility
The University promotes the full participation of students who experience disabilities in their academic programs. To that end, academic accommodation is a shared responsibility between the University and the student.
When accommodations are needed, the student must first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required. However, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 7 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

More information: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas)

**Academic Misconduct**

The University of Guelph is committed to upholding the highest standards of academic integrity. 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 are responsible for 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 finding 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 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 made about course work—including lectures—can not 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](http://www.uoguelph.ca/sas) are the source of information about the University of Guelph’s procedures, policies and regulations, which apply to undergraduate, graduate and diploma programs.

**Illness**

Medical notes will not normally be required for singular instances of academic consideration. However, students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g. final exam or major assignment).
Safety Protocols
For information on current safety protocols, follow these links: https://news.uoguelph.ca/return-to-campuses/ and https://uoguelph.eu.qualtrics.com/jfe/form/SV_4Ntfm8k1oXAPssm

Please note, these guidelines may be updated as required in response to evolving University, Public Health, or government directives.

Disclaimer
Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class e-mail. All University-wide decisions will be posted on the COVID-19 website [https://news.uoguelph.ca/2019-novel-coronavirus-information/] and circulated by e-mail.