

GEOG 3204(3)-001

Climate Change & Variability

U2023W Term (Jan-Apr 2024)

Instructor: Danny Blair
Office: 5L33
Office Phone: (204) 786-9236
Office Hours: Tue/Thu 1:30 – 2:30 pm, or by appointment (preferred)
Email: d.blair@uwinnipeg.ca
Lectures: Room 3M54
Tuesdays/Thursdays, 10:00 – 11:30 am

Textbook

The textbook for this course (**required**) is:

- ***Introduction to Modern Climate Change*** (3rd edition, 2022), by Andrew E. Dessler (published by Cambridge University Press)
- It is not in the bookstore. It is available as an e-book/paperback **directly from the publisher** (~\$45 US) at:
- <https://www.cambridge.org/highereducation/books/introduction-to-modern-climate-change/AD26BD3227322A87F72BEEA655AB1CF7#overview>
- Or it is also available for your Kindle or as a paperback from Amazon.ca (slightly cheaper than publisher, I think).

I will also be supplementing textbook readings with links to journal articles and other reports as needed. Links to these will be made available through Nexus.

Course Description

The causes and characteristics of regional and global climate change and variability will be examined, as will be the methods of reconstructing climate histories. Emphasis will be placed on the North American experience. Topics will include atmosphere teleconnections (e.g., El Niño and La Niña), global warming, and climate forecasting.

Learning Outcomes

By the end of this course students should have a good understanding of:

- the general nature of climate variability vs climate change; in particular, how to recognize when variability becomes change
- the causes of climate change in the past, and how it informs us about modern climate change
- the main methods used to reconstruct climates of the past (paleoclimatology)
- the evidence for anthropogenic modern climate change
- the methods used to produce climate projections
- the importance and inevitability of uncertainty
- the potential impacts of climate change
- the challenges and opportunities regarding mitigation and adaptation
- the need for urgent action; what we must do.

Course Organization

The topics that will be covered in this course, at least to some extent, are listed below. The instructor reserves the right to change the order of the topics, and to even remove or add topics.

Readings from the textbook and other sources will be assigned on an ongoing basis.

Order	General Topics	Some of the Specific Topics
1	Introduction to the importance of climate change and the urgency of dealing with it	Where we've been, where we are, where we may be going
2	The difference between variability and change	Weather vs climate; ocean-atmospheric interactions; the important modes of variability
3	The carbon cycle	Sources and sinks of carbon; the Keeling Curve
4	Radiation and radiative forcing	Greenhouse gases, radiation balance, feedbacks
5	Paleoclimate change and more recent change	Ice ages, Milankovitch Cycles, feedbacks, the Holocene, hockey stick graph, methods of reconstruction
6	Recent warming and change	Observation system, trends, cryosphere, oceans, precipitation/water cycle, impacts already observed
7	Climate models	Modelling and uncertainty, scenarios, assessing risk, potential impacts on human and natural systems, urgency
8	Canada's situation	The Climate Atlas of Canada, health, agriculture, forests, cities and more
9	What to do?	Mitigation and adaptation strategies, solutions, social change, hope

Student Evaluation

Midterm Test	15%
Shorter Writing Assignment	10%
Longer Writing Assignment	30%
Final Exam	45%

The Shorter Writing Assignment will be on a specific topic. The Longer Writing Assignment will be on a topic chosen by the student in consultation with the instructor. Detailed instructions and expectations regarding the writing assignments will be provided when they are assigned; they must be typed, and there will be a penalty for assignments handed in late. The final exam will be comprehensive.

Grading

A+ = 90% and up	B+ = 75-79.9	C+ = 65-69.9	D = 50-54.9
A = 83-89.9	B = 70-74.9	C = 55-64.9	F = 49.9 and below
A- = 80-82.9			

The numeric boundaries separating letter grades may be altered at the demand of the Departmental Review Committee. Grades are not final until approved by the University Senate. **Friday March 15 is the FINAL DATE to withdraw without academic penalty. Withdrawing before the VW date does not necessarily result in a fee refund.**

NEXUS

As needed, the instructor will assign readings; all assigned readings are testable unless otherwise noted. The readings and the slide presentations used in class will be posted on NEXUS (<https://nexus.uwinnipeg.ca/>). If you are having difficulties with NEXUS contact the help desk at (204) 786-9149 or connect to the Nexus supports listed on the Nexus page noted above.

Email

Your University of Winnipeg email address will be used for course related correspondence (name@webmail.uwinnipeg.ca). Please do not use the Nexus email function. Please do not use your gmail or hotmail or other accounts to correspond with the instructor.

Students have the responsibility to regularly check their UWinnipeg e-mail mailboxes to ensure timely receipt of correspondence from the University and/or their course instructors.

Important Dates

Date	Importance
Tue Jan 9	First lecture in this course
Tu Jan 23	Shorter Paper Assigned
Tue Feb 6	Shorter Paper Due (10:00 am; before class)
Tue Feb 6	Longer Paper Assigned
Feb 19 - 23	Mid-term Reading Week; No Classes
Mon Feb 19	Louis Riel Day: University Closed
Tue Feb 27	Midterm Test
Fri Mar 15	Last Day to Withdraw Without Academic Penalty*
Fri Mar 29	Good Friday; University Closed
Thu Apr 4	Last Lecture in this course
Thu Apr 4	Longer Paper Due (10:00 am; before class)
https://www.uwinnipeg.ca/exam-schedules/	Final Exam (exam period is Apr 11-24) Date TBD

* **Voluntary Withdrawal:** You must formally withdraw from a course. If you simply stop going to classes, you may receive an “F” on your transcript and loss of tuition credit. Please refer to the 2023-24 Academic Calendar for Voluntary Withdrawal procedures. Please note that withdrawing before the Voluntary Withdrawal date does not necessarily result in a fee refund.

Alternate test dates will be considered in very exceptional cases and for legitimate reasons only; vacation travel is not an acceptable reason. If you miss a test, you must contact your instructor in person immediately upon your return to the university. Documentation (i.e., proof of illness or circumstances beyond your control) is required before alternate arrangements can be made.

The Final Exam must be written as scheduled in the 2023-2024 Exam Timetable. If you have a Final Exam conflict (i.e., two final exams on the same date and time), or if circumstances beyond your control prevent you from writing the exam as scheduled, you must contact Academic Advising immediately; otherwise, you must write the final exam as scheduled.

Please refer to Section 9.d. under REGULATIONS & POLICIES in the 2023-2024 Undergraduate Academic Calendar.

OTHER INFORMATION

1. A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.
2. Students can find answers to frequently asked questions related to remote learning here: <https://www.uwinnipeg.ca/covid-19/index.html>
3. When it is necessary to cancel classes due to exceptional circumstances, the instructor will make every effort to inform you via University of Winnipeg email, and/or NEXUS announcements.
4. Students have the responsibility to regularly check their University of Winnipeg e-mail addresses, as well as NEXUS announcements, to ensure timely receipt of correspondence from the University and/or their course instructors.
5. Please note that withdrawing before the VW date does not necessarily result in a fee refund.

ACADEMIC REGULATIONS, POLICIES, AND ACADEMIC INTEGRITY

Students are encouraged to familiarize themselves with the Regulations and Policies found in the University Academic Calendar at

<https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>

Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals), and 10 (Grade Appeals).

A summary of important information regarding Academic Misconduct follows. Where discrepancies exist between the text below and the Course Calendar, the Course Calendar will prevail.

Academic Misconduct

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures:
- <https://www.uwinnipeg.ca/policies/docs/policies/academic-misconduct-policy.pdf>
- <https://www.uwinnipeg.ca/policies/docs/procedures/academic-misconduct-procedures.pdf>
- Non-Academic Misconduct Policy and Procedures:
- <https://www.uwinnipeg.ca/policies/docs/policies/student-non-academic-misconduct-policy.pdf>
- <https://www.uwinnipeg.ca/policies/docs/procedures/student-non-academic-misconduct-procedures.pdf>

Misuse of Filesharing Sites. Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves “aiding and abetting” plagiarism. Students who do this can be charged with Academic Misconduct.

Avoiding Copyright Violation. Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. Students who upload these materials to filesharing sites, or in any other way share these materials with others

outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor/presenter before, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor's intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy: <https://copyright.uwinnipeg.ca/basics/copyright-policy.html>

Research Ethics. Students conducting research interviews, focus groups, surveys, or any other method of collecting data from any person, including a family member, must obtain research ethics approval before commencing data collection. Exceptions are research activities done in class as a learning exercise. For submission requirements and deadlines, see <http://www.uwinnipeg.ca/research/human-ethics.html>

Plagiarism. Even unintentional plagiarism, as described in the UW Library video tutorial "Avoiding Plagiarism" (<https://www.youtube.com/watch?v=UvFdxRU9a8g>), is a form of academic misconduct. Similarly, uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) is a form of misconduct, as it involves aiding and abetting plagiarism. An updated and expanded U of Winnipeg library site outlining principles of Academic Integrity can be found at <https://library.uwinnipeg.ca/use-the-library/help-with-research/academic-integrity.html>.

Academic Integrity and AI Text-generating Tools. Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). If an instructor prohibits the use of AI tools in a course, students may face an allegation of academic misconduct if using them to do assignments. If AI tools are permitted, students must cite them. According to the MLA (<https://style.mla.org/citing-generative-ai/>), "you should

1. cite a generative AI tool whenever you paraphrase, quote, or incorporate into your own work any content (whether text, image, data, or other) that was created by it
2. acknowledge all functional uses of the tool (like editing your prose or translating words) in a note, your text, or another suitable location
3. take care to vet the secondary sources it cites"

If students aren't sure whether or not they can use AI tools, they should ask their professors.

Forms of Academic Misconduct

See online: <http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>

- **Plagiarism:** includes presenting other people's published or unpublished work in part or as a whole as your own. This includes material from lab manuals, essays, journal articles, books, etc. Plagiarism also refers to submitting the same work in more than one course without both instructors' permission and to the situation where two or more students submit identical (or nearly identical) work for evaluation when the work was to be completed individually.
- **Cheating:** includes copying another person's answer on a test, communicating with another person during a test or exam, consulting unauthorized sources (including written and electronic sources), obtaining a copy (of all or part) of a test/exam/assignment before it is officially available, purchasing tests, essays or other assignments and submitting the work as your own.
- **Improper Academic/Research practices:** include fabricating or falsifying results, using other peoples' research findings without permission, misrepresenting research results or methods, referring to non-existent sources or investigators, or contravening the University's Policy and Procedures on Research Integrity.
- **Obstructing academic activities of another person:** for example interfering with another person's access to pertinent resources or information to gain academic advantage.
- **Impersonation:** both impersonation of another individual or allowing someone to

- impersonate you.
- Falsification or Modification of an Academic Record: including tests, transcripts, letters of permission, etc.
- Aiding and Abetting Academic Misconduct.

Penalties for Academic Misconduct

Penalties for academic misconduct include, but are not limited to:

- Written warning
- Lower or failing grade on an assignment or test
- Lower or failing grade in the course
- Denial of admission or readmission to the University
- Forfeiture of University awards or financial assistance
- Suspension from the University for a specified period of time
- Withholding or rescinding a U or W degree, certificate or diploma
- Expulsion from the University

Procedures for Academic Misconduct

All allegations of academic misconduct must be reported initiating a process which involves several steps. These include procedures involving the instructor of the course in which the misconduct is alleged to have occurred, the Departmental Review Committee, and the Senate Academic Misconduct Committee. Students facing a charge of academic or non-academic misconduct may choose to contact the UWSA Student Advocacy Centre where Student advocates will be available to answer any questions about the process, help with building a case and ensuring students have access to representation. For more information or to schedule an appointment, visit the UWSA website at www.theuwsa.ca/academic-advocacy or call 204-786-9780.

Non-Academic Misconduct / Respectful Learning Environment

Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered non-academic misconduct. See the Respectful Working and Learning Environment Policy (<https://www.uwinnipeg.ca/respect/respect-policy.html>) and Acceptable Use of Information Technology Policy (<https://www.uwinnipeg.ca/policies/docs/policies/acceptable-use-of-information-technology-policy.pdf>). More detailed information is outlined in the Non-Academic Misconduct Policy and Procedures: <https://www.uwinnipeg.ca/policies/docs/procedures/student-non-academic-misconduct-procedures.pdf>

UNIVERSITY SERVICE INFORMATION

Accessibility Services

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 204-786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential. <http://www.uwinnipeg.ca/accessibility>.

Indigenous Student Services

Indigenous students seeking additional supports, academic or other, are encouraged to contact the Aboriginal Student Services Centre (ASSC). The ASSC offers a variety of support services, and was created to maintain a safe, educational and culturally

sensitive environment for all Aboriginal students (First Nation, Metis and Inuit) as they pursue their academic studies at The University of Winnipeg. More information can be found at: <http://www.uwinnipeg.ca/assc/>

Respectful Working and Learning Environment Policy

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at www.uwinnipeg.ca/respect.

Academic Accommodation for Religious Reasons

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide an opportunity for students to make up examinations without penalty. A list of religious holidays can be found at:

<http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf>

Student Wellness

The University of Winnipeg provides comprehensive general and specialized counselling and health services to all students for free at the Wellness Centre, located on the first floor of <https://www.uwinnipeg.ca/student-wellness/>

Privacy

Students are encouraged to familiarize themselves with their rights in relation to the collecting of personal data by the University (<https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html>), especially if Zoom is being used for remote teaching (<https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html>) and testing/proctoring (<https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html>).

In the event of extenuating circumstances, the instructor reserves the right to make changes to any information presented in this document, after consulting with, or with the approval of, the class. Changes in test dates require the unanimous approval of the class.

Note: The information presented in this course is the intellectual property of the instructor(s) and is presented for the benefit of registered students only. Any audio, video, or virtual reproduction of the lectures or labs, or any posting or distribution of course materials, either in whole or in part, without the express written consent of the instructor(s) is strictly prohibited.