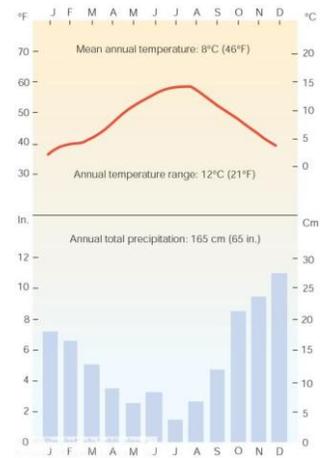




GEOG-2207(3)-001

Climatology

Fall, 2021
September 7th to December 6th 2021



INSTRUCTOR:

Dr. Jacqueline Binyamin
Office: 5L10
Phone: (204) 786-9982
E-mail: j.binyamin@uwinnipeg.ca
Office Hours (Zoom): Monday and Friday 12:00 – 13:00 or by appointment

LECTURES:

Monday, Wednesday and Friday (Zoom), 9:30 – 10:20, Online-Synchronous

LABS:

(Zoom meetings)
Section 070, Wednesday, 15:00 – 16:50
Section 071, Friday, 15:00 – 16:50

All classes will be conducted online using a combination of **Nexus** Communication Tools and **Zoom**. Students must be available during the posted lecture and lab times for live streaming and/or discussions. Other course materials will be posted on Nexus.

A recurring zoom link will be sent at the beginning of the course to all students registered for the course. The same link can be used for all lectures, labs and office hours. While it is not necessary to keep video on during lectures, however, students are required to do so during tests and exams.

Students are expected to arrive **on time** for zoom lectures and keep their microphones on mute unless they have a question or comment or are participating in a discussion. If you have a question, you can use the ‘raise hand’ feature or use the chat option in zoom to ask the question and the instructor will call on you when ready. **Live lectures will not be saved as video files.** These tools will also be reviewed on the first day of class.

COURSE NEXUS:

Use your WebAdvisor User ID and Password.

Login in at <https://nexus.uwinnipeg.ca>

If you are having difficulties with Nexus, contact the help desk at 204-786-9149 or servicedesk@uwinnipeg.ca

Please use your University of Winnipeg email address for course related correspondence: name@webmail.uwinnipeg.ca. Students have a responsibility to regularly check their **Nexus e-mail addresses** to ensure timely receipt of correspondence from their course instructor. Emails

from others accounts such as Hotmail or Gmail are frequently treated as spam and thus may not reach the recipient. **This course will send emails through NEXUS so please check regularly.**

REFERENCES:

Boundary Layer Climates

By **T. R. Oke (1987), 2nd ed., (University Press Cambridge)**
ISBN: 0-416-04422-0

Climatology

By **Rohli, R. V. and A. J. Vega (2015), 3rd ed., (Jones and Bartlett)**
ISBN-10: 0-7637-3828-X
ISBN-13: 978-0763738280

Earth's Climate: Past and Future

By **W. F. Ruddiman (2013), 3rd ed., (Freeman and Company)**
ISBN-13: 978-1429255257
ISBN-10: 1429255250

Consider a Spherical Cow: A Course in Environmental Problem Solving

By **John Harte (1998, 2001), (University Science Books)**
ISBN: 0-935702-58-X

Climatology: An Atmospheric Science

By **Hidore J. J., Oliver J. E., Snow M., and R. Snow (2010), 3rd ed., (Pearson- Prentice Hall)**
ISBN-13: 978-0-321-60205-3

There is no required text book for this course. However, for those who would like to supplement lectures, some of these books have been reserved at the front desk in the library.

Office hours are scheduled in **Monday and Friday 12:00 – 13:00**. If these hours are inconvenient, appointment can be arranged through **Nexus email** or The University of Winnipeg email address. The instructor will respond within 24 hours, except on weekends.

Please visit the University of Winnipeg's Weather Station webpage at:
Weatherstation.uwinnipeg.ca

COURSE DESCRIPTION:

This course examines climatological processes at all scales (e.g., micro to macro), to arrive at an understanding of how and why climates vary spatially and temporally. It surveys the characteristics of the global climate system; but pays particular attention to the Northern Hemisphere and North America. Laboratory exercises involve the analysis and presentation of climatological data.

COURSE OBJECTIVES:

Through this course students should gain an appreciation of statistical climatology, which describes the average and the range of weather conditions, physical climatology, which deals with energy and moisture exchanges and related atmospheric processes, dynamic and synoptic climatology, which examine atmospheric systems and their motions, and applied climatology, which uses climatology to address real world problems. Students should acquire some understanding of the climate of the Canadian Prairies.

LABORATORIES:

The labs in Climatology are considered integral parts of the course and will be presented as such. Therefore, it is the responsibility of the student to attend all scheduled labs and to complete the assignments as required. Information on laboratory procedures will be discussed during the first lab session.

If you are not registered in a lab section, or if you wish to change lab sections, you must contact your lab instructor during the first week of classes. Lab section changes will be considered only if space permits.

It is imperative that all students attend their scheduled lab sections regularly. Labs in this course begin the week of **September 13**. Labs are conducted via **Zoom**.

GRADING PROCEDURE:

Lab Assignments 30% (6 labs at 5% each)
Midterm Theory Test 30% (2 Tests at 15% each)
Final Theory and Lab Exam (combined) 40%
Total 100%

Final grades will be assigned on the basis of accumulated scores from the above components. The following numeric grading system provides guidelines only for the separation of letter grades in this course. The University does not have a standardized numerical grade conversion scale for each letter grade. The boundaries may be adjusted at the request of the Geography Department Review Committee or University Senate.

%	90-100	84-89	80-83	75-79	70-74	65-69	55-64	50-54	<50
Grade	A+	A	A-	B+	B	C+	C	D	F

Lab Assignments: Detailed instructions for the assignments as well as marking schemes will be given on Nexus and through logging into the Citrix Remote Connection. All assignments should be submitted to Nexus and must be completed by individual students.

Penalties (For Late Submission of Lab Assignments):

Lab assignments will be accepted until five days after the submission date with 5% of the total mark of the assignment being deducted each day from the mark achieved (weekends and holidays are considered as normal days). Work submitted 6 days late or more shall not be accepted.

There will be NO make-up work or bonus material of any kind.

TEST/EXAM POLICY

Exams will be given **online**, via **Zoom and Nexus**. All exams are “**closed-book**” exams proctored through Zoom with your webcam on. You may not view any notes, books, websites, etc. while taking the exam. Use of a simple calculator or dictionary is allowed but no other electronic devices are permitted.

If you miss a test or exam, you must contact your instructor immediately. Proof of illness or exceptional circumstances is required before alternate arrangements can be made. Vacation travel is not an acceptable reason.

The makeup test/exam will occur **within 5 school days** of the missed date. In the event of illness this deadline will be **within 5 school days** from the “**return to work**” date noted on the medical certificate. It is the student’s responsibility to schedule the makeup exam. Failure to schedule within the defined timeline will result in a grade of zero (0) for that test/exam.

The **Final Theory Exam** must be written as scheduled in the 2021-22 Fall/Winter Timetable; alternate dates will not be considered. If you have a Final Theory Exam conflict (i.e., two final exams on the same date and time), or if exceptional circumstances 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 9d, of Regulation and Policies in the 2020-22 Course Calendar link: (<http://www.uwinnipeg.ca/index/calendar-calendar>).

IMPORTANT DATES:

Tuesday, September 7
Monday, September 13
Wednesday, September 22, 2021

Lectures begin for the 2021 Fall Term.
First week of Climatology Lab.
Autumnal Equinox at 14:21 CDT (19:21 UTC/GMT).

Thursday, September 30
Wednesday, October 6 at 09:30

Truth and Reconciliation Day– University closed.
Midterm Theory Test #1, online (class time).

Monday, October 11
October 11-15
Sunday, November 7

Thanksgiving Day - University closed.
Fall term Reading Week – no lectures or labs.
Daylight Saving Time ends – turn your clock back one hour!

Wednesday, November 10 at 09:30
Thursday, November 11
Tuesday, November 16

Midterm Theory Test #2, online (class time).
Remembrance Day – University closed.
Final date to withdraw without academic penalty.
Please note that withdrawing before the VW date does not result in a fee refund.

Monday, December 6, 2021

Lectures end for the 2021 Fall Term.

December 10-23, 2021

Final Exam Period

Final Exam

Please check <http://www.uwinnipeg.ca/exam-schedules/> for final exam time-online.

Tuesday, January 4, 2022

Perihelion at 12:52 am CST (06:52 UTC/GMT).
Aphelion on Monday, July 4, 2022 at 02:10 CDT (07:21 UTC/GMT).

Thursday, January 6, 2022

Lectures begin for the 2022 Winter Term.

Voluntary Withdrawal

Please note the deadline date for voluntary withdrawal from this course is **November 16, 2021.** Students are encouraged to see the instructor before withdrawal to discuss matters pertaining to the grades. Withdrawing before this date does not necessarily result in a fee refund.

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.

TOPICS FOR DISCUSSION:

The following table outlines the topics to be covered during the lectures. Due to time constraints or conditions beyond the instructor's control, all topics may not be covered. Also, the instructor reserves the right to alter the topics and the order of presentation.

Topics
Introduction to climatology: Scales in climatology Sub-fields of climatology, Climate system components, Atmospheric composition.
Climate controls: Forcing, responses and feedbacks, Climate archives.
Atmospheric heating/cooling: Heat and mass exchange terms.
Radiation and global energy balance: Radiation laws, Global radiation and energy budgets, Solar constant and extraterrestrial radiation, Greenhouse effect, Role of clouds in cooling/warming the earth.
Energy, matter, and momentum exchanges near the surface: the soil-atmosphere system, Planetary boundary layer, wind profile, Thermal stratification and deep ocean circulation.
Mass balances: Water balance and Hydrological cycle, Aridity index, World climates.
Global temperature and precipitation: Temperature and precipitation anomalies
Causes of climate change: <ul style="list-style-type: none">• Natural causes (Orbital variations (Milankovitch cycles), Solar output variations, Volcanic activity, ENSO events, El Niño and La Niña, Teleconnections)• Anthropogenic climate change (Atmospheric aerosols, Ozone depletion, Greenhouse effect and Urban heat island)
Applied climatology: climate impacts, and climatic data.

Electronic Device Policy

Please be considerate: **Deactivate** all cellular telephones, personal pagers, watch alarms, and any other device that may emit irritating noises during zoom lectures, including muting your device when not speaking. You may have your video on or off.

Attendance Policy

Students are encouraged to attend all classes and to participate in class discussions. Please note that lectures may cover materials not given in the text book and in lecture notes.

ACADEMIC REGULATIONS AND POLICIES

1. Students can find answers to frequently asked questions related to remote learning here: <https://www.uwinnipeg.ca/covid-19/remote-learning-faq.html>.
2. When it is necessary to cancel a class due to exceptional circumstances, every effort will be made to inform students via UWinnipeg email and post it in Nexus.
3. The first day of class is Wednesday September 8, 2021. Last class will be held on December 6, 2021. Evaluation period is December 10-23, 2021.

4. The dates the University is closed for holidays, irrespective of campus closure related to COVID-19: September 6 (Labour Day), September 30 (Truth and Reconciliation Day), October 11 (Thanksgiving Day), November 11 (Remembrance Day).
Fall mid-term reading week is October 11-15.
5. 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 opportunity for students to make up work or examinations without penalty. A list of religious holidays can be found in the 2021-22 Undergraduate Academic Calendar.
6. Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams or during lectures/laboratories are encouraged to contact Accessibility Services (AS) at 204.786.9771 or <https://www.uwinnipeg.ca/accessibility-services/> to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
7. **Regulations, Policies, and Academic Integrity.** Students are encouraged to familiarize themselves with the "Regulations and Policies" found in the University *Academic Calendar* at: <https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>. Particular attention should be given to subsections 8 ("Student Discipline"), 9 ("Senate Appeals"), and 10 ("Grade Appeals"). Please emphasize the importance of maintaining academic integrity, and to the potential consequences of engaging in plagiarism, cheating, and other forms of academic misconduct. 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. More detailed information can be found here:

Academic Misconduct Policy and Procedures:

<https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf>.

8. **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 (*e.g. Respectful Working and Learning Environment Policy* <https://www.uwinnipeg.ca/respect/respect-policy.html>, *Acceptable Use of Information Technology Policy* <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/acceptable-use-of-information-technology-policy.pdf>) could be considered "non-academic" misconduct. More detailed information can be found here:

Non-Academic Misconduct Policy and Procedures:

<https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf>.

Forms of Academic Misconduct:

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

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 a 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 of 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, contact us at ypsa@theuwsa.ca or 204-786-9780.

- 9. Copyright and Intellectual Property.** 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/docs/copyright_policy_2017.pdf).
- 10. 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>
- 11. Privacy.** Students should be reminded of 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>).
- 12. 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/>.