



UNIVERSITY OF MANITOBA

CLAYTON H. RIDDELL FACULTY OF ENVIRONMENT, EARTH, AND RESOURCES

DEPARTMENT OF ENVIRONMENT AND GEOGRAPHY

GEOG 3390 D01: INTRODUCTION TO CLIMATE CHANGE AND ITS CAUSES

COURSE SYLLABUS: WINTER 2024

Territory Acknowledgement

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota and Dene peoples, and on the homeland of the Métis Nation. We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.

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Course Details

Course Title & Number:	GEOG 3390 D01
Number of Credit Hours:	3 credit hours
Class Times & Days of Week:	No in-person lectures; all material is online (UMLearn)
Prerequisites:	Prerequisite: a minimum of three credit hours from Geography or Environment courses, or permission of department head.

Instructor Contact Information

Instructor(s) Name:	Dr. John Iacozza
Preferred Form of Address:	John or Dr. Iacozza
Office Location:	250 Wallace Building
Office Hours or Availability:	Monday 11:00 am – 12:00 pm
Office Phone No.	204-474-8483
Email:	John.Iacozza@umanitoba.ca
Contact:	I will respond to emails or phone calls between 9 am and 4 pm, Monday to Friday. All efforts will be made to respond within 48 hours, excluding weekends.

Course Description

Calendar Description: The primary objective of this course is to provide students with a general understanding of the physical and astronomical factors that drive global climate change. Focus will be given to current and future climate change in the context of observations and modeling.

Extended Description: Climate change is one of the most pressing issues facing your generation. It has local, national and global implications not only for us, but more importantly for your children. However, to address this problem, students need to understand the context of current and future climate change, what is currently happening with regards to our climate system, the impacts of these changes on the Earth system and human dimension, and finally what is causing these changes. This course will provide the theoretical framework for climate change in the lectures, and students will apply the basic principles to real-world data and models in the assignments.

Course Goals

The goal of the course is to provide students with a broad understanding of the issues around climate change, a unique and complex issue facing the world. The learning objectives attempt to focus the course on the main components of this complex issue. At the end of the course, it is my goal that students understand the issue of climate change, and how climate has changed in the past 4.5 billion years.

At the conclusion of this course, students will be able to:

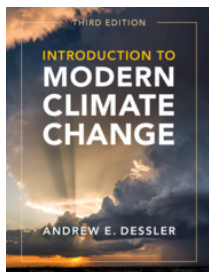
- explain the broad concept of climate change and the importance of this issue;
- analyze the fundamental principles and processes that control the Earth's climate system and the role the Sun plays in this system;
- describe the main climate change events over the past billion years in Earth's history;
- assess the mechanisms responsible for past climate change events;
- appraise current changes to the Earth's climate and the relationship to the other parts of the Earth's system;
- differentiate between the natural and anthropogenic factors that drive current and future climate change; and
- evaluate the methodology for and predictions of future climate change based on different scenarios.

Learning Activities

During this course, students are asked to participate in a number of learning activities. These activities are designed to help in their understanding of the various aspects of climate change. The specific activities include the following:

- viewing the voice over PowerPoint slideshows associated with each module. These videos will be available on UMLearn and students will be able to access them anytime during the term,
- reading assigned instructional material, including textbook chapters, as well as viewing any animations/videos provided in UMLearn,
- complete weekly ungraded quizzes on the lectures of the unit, and
- demonstrate your learning through a variety of assessments, including assignments, thought provoking discussions and a final exam.

Textbook



Dessler, A.E. (2022) Introduction to Modern Climate Change (3rd ed.)
Cambridge Press. ISBN: 978-1-108-79387-2

What You Can Expect From Me

- I will listen actively and be respectful ([Respectful Work and Learning Environment Policy.](#))
- I will keep conversations confidential, sharing ideas but not specific stories or names.
- I will be punctual for all meetings.
- I will be available for meetings outside of class times to discuss course material and assignments/tests. Please feel free to make an appointment through email if you are not available during office hours.
- I will have assignments (normally) graded within 2 weeks of submission. Grades are provided through UMLearn, and will consist of both formative (i.e. comments) and summative (i.e. grade) assessment.

What I Can Expect From You

- You will treat me, and other students with respect ([Respectful Work and Learning Environment Policy.](#))
- You will accept that it is OK not to know, both for yourselves and others, and ask questions when you need to.
- You will view online lectures and take notes, as well as participating in class discussions.
- You will make every effort to read the assigned chapters of the textbook *prior to the unit*. Not all the textbook will be covered in the lectures but may be covered on the quiz or exam.
- You will complete the assignments individually and on time, unless otherwise stated. Students may consult with other students; however, it is expected that all assignments will be submitted in the student's own words. (See section of course outline on Academic Integrity).

Class Schedule

The following table lists the anticipated dates for each unit and associated readings for this course.

DATE	TOPIC	READINGS
JAN 8 - 19	UNIT 1: Introduction	pp. 1 – 5; 221-240
JAN 22 – FEB 2	UNIT 2: Review of Energy System	pp. 39 – 62; 69 – 78; 91 – 93
FEB 5 – 16	UNIT 3: Climate Change in Context	pp. 28 - 35
FEB 19 - 23	SPRING BREAK	
FEB 26 – MAR 8	UNIT 4: Current Climate Change	pp. 16 - 28
MAR 11 – 22	UNIT 5: Forcing Factors	pp. 78 – 88; 93 – 107; 112 - 125
MAR 25 – APR 5	UNIT 6: Future Climate Change	pp. 129 – 144; 146 - 165; 187 – 201; 205 - 216
APR 8 – 10	Final Exam Review	

Voluntary Withdrawal Date

The voluntary withdrawal date is the last date for withdrawing from this course without academic penalty. The voluntary withdrawal date for this course is **March 20, 2024**. Evaluative feedback will be provided prior to this date.

Course Evaluation Methods

The final grade will be evaluated based on the following assessments: assignment, thought provoking discussions and a final exam. The breakdown of the marks is provided below:

<i>EVALUATION</i>	<i>PERCENTAGE</i>
Assignments (5 in total – 10% each)	50%
Thought Provoking Discussion (6 in total + summary)	15%
Final Exam	35%
TOTAL	100%

Assignments

Students are required to complete five assignments throughout the course, each covering a specific unit of the course. The assignments will involve application of the knowledge gained through the lectures, and may involve calculations as well as qualitative discussion on the principles discussed in the lectures. Assignments must be submitted through UMLearn; emailed assignment WILL NOT be accepted at any time for any reason. Students can submit multiple versions of the assignment, however only the most recent document will be graded. Assignment must be completed independently (see section on academic integrity).

Format:

- Assignments must be submitted as a **SINGLE MS WORD DOCUMENT**. Submission of the assignment in any other format (including Excel, PDF or Pages) will be given a grade of 0.
- Handwritten answers will not be accepted for any reason and thus will be given a grade of 0. This includes photos of handwritten answers.
- Answers to questions must be provided in complete sentences and double-spaced; 10% will be deducted for improper format
- Questions involving calculations must have a concluding statement that provides the answer to the question (i.e. The wavelength of maximum emission is 6.75 mm). Failure to do so will result in a deduction of 0.5 mark for each question.

Thought Provoking Discussion

The discussion questions will be utilized to facilitate engagement with other students. For each unit, students are asked to provide their opinion to an open-ended question or scenario based on the material for the unit and available in UMLearn, as well as reply to the responses by other students. These discussions will typically not have a correct answer; rather will be opinion-based. Therefore, grades will be provided based on the quality of their opinion, rather than 'correctness'. A full mark will be provided for an original post to the question, and one-half mark each for two responses to other students' post for a total of 2 marks. In order to get the full marks, your response(s) to other students' post should be more than a simple statement of

agreement. Something such as *"Great post John. I really liked your discussion on polar bears"* will receive no marks. You need to add to the discussion by posting a question, elaborating on point(s) made or any other points that can further the original post. The discussion questions will be available from Monday at 12:01 am until Friday at 11:59 pm (Central Time).

In addition, students will also be required to provide a brief summary of the posts for ONE of the discussion questions for an additional 3 marks. This summary should outline the main points made in the discussion and reflect on how your opinion/knowledge of the topic has changed (or not) after reading the posts. The grade will be based on completeness of the summary and how the student has reflected on the topic. The summary should be no more than 250 words, and should follow the guidelines for the assignment

Final Exam

The final exam for this course will be a combination of multiple choice and short answer questions. The questions will be designed to test the student's understanding of the main concepts, and integrate the knowledge gained through the various units. The material covered in the final exam will be cumulative and include all units. Questions will not involve any calculations and thus no calculators are needed. Students will have 2 hours to complete the exam on the date scheduled by the University. No extraneous devices (i.e., dictionaries, cell phones, notes, textbooks, etc.) will be allowed for the final exam. Students must be available during the university examination period.

Ungraded (formative) assessment

Students should complete 6 quizzes (one for each unit) with immediate feedback. These quizzes will not be part of the final grade; however, will allow students to gauge their knowledge as they progress through the units and prepare for the final exam. Each quiz will involve 20 multiple choice/true-false questions. The questions will be standard multiple choice format. Multiple attempts will be allowed with no timing enforced. The quizzes will be available for the entire unit, closing on the Friday before the end of the unit. Photos of the questions/answers should not be taken for any reason (see section on Copyright).

Assessment Due Dates

The following table lists the tentative dates for the assessments for this course.

<i>ASSIGNMENT</i>	<i>DUE DATE</i>
Thought Provoking Question #1: You and Climate Change	January 19, 2024
Thought Provoking Question #2: Review of Energy System	February 2, 2024
Assignment #1: Review of Energy System	February 2, 2024
Thought Provoking Question #3: Future Climate Change in Context	February 16, 2024
Assignment #2: Future Climate Change in Context	February 16, 2024
Thought Provoking Question #4: Current Climate Change	March 8, 2024
Assignment #3: Current Climate Change	March 8, 2024
Thought Provoking Question #5: Forcing Factors	March 22, 2024
Assignment #4: Forcing Factors	March 22, 2024
Thought Provoking Question #6: Future Climate Change	April 10, 2024
Assignment #5: Future Climate Change	April 10, 2024
Thought Provoking Question Summary	April 10, 2024
Final Exam	TBD

Extension and Late Submission Policy

Assignments must be submitted in UMLearn, by **11:59 pm** on the due date. Late assignments will be assessed a penalty of 10% per day unless the student has obtained approval 48 hours in advance of the deadline from Dr. Iacozza. It is the student's responsibility to contact Dr. Iacozza through email at least 48 hours prior to the deadline. Any request after this time period or after the deadline will not be accommodated.

Extensions will not be provided for the online discussions for any reason. Students have a week to complete the discussions, therefore it is recommended not to leave this assessment until the last day.

Students requiring an extension for the final exam need to contact their faculty; Dr. Iacozza cannot provide a different date for the final exam without proper approval for a deferred exam. If you have any questions, please see Dr. Iacozza.

Reasons for granting an extension: a death in your immediate family, an illness in either yourself or in a dependent, and student is required to travel for work.

Reasons for not granting an extension: having another assignment or midterm on the same day, being away from the university for a personal reason (i.e. personal vacation), being too busy with other course work, not attending the lectures, computer is not working properly and you lost the assignment, or any other reason deemed inappropriate by Dr. Iacozza. This is not an exhaustive list. If you will be away, the assignment must be submitted before due date to not be assessed a late penalty.

Students who are unable to meet a course requirement due to medical circumstances are currently not required to submit medical notes. However, students are required to contact Dr. Iacozza or their academic advisor by email to inform of the missed work and to make arrangements for extensions, deferrals, or make-up assignments. The email must be sent at

least 48 hours prior to the due date for an assignment and 24 hours prior to the date of the quiz.

Grade Distribution

<i>LETTER GRADE</i>	<i>PERCENTAGE RANGE</i>	<i>DESCRIPTION</i>
A+	90-100	Exceptional
A	80-89.9	Excellent
B+	75-79.9	Very Good
B	70-74.9	Good
C+	65-69.9	Satisfactory
C	60-64.9	Adequate
D	50-59.9	Marginal
F	0-49.9	Failure

NOTE: All final grades are subject to departmental review.

Referencing Style

Students must use the APA reference style as outlined in the text:

American Psychological Association. (2009). Information on this referencing style can be found on the UM Libraries website: <http://libguides.lib.umanitoba.ca/c.php?g=298394>. If you use the course lectures to answer any questions in the assignments, you must properly cite the course notes. This can be found in the APA reference style guide through the UM Libraries.

Course Technology

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by Dr. Iacozza and/or the University of Manitoba Accessibility Services. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g., Facebook), online and offline “gaming”) during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on silent mode and leave the classroom before using it. Your computer or device, and internet connection must meet the UM minimum requirements. You should be familiar with Zoom, the video conferencing system, as well as UMLearn, the course management software used by the University of Manitoba. You can access online resources for UMLearn through [Centre For The Advancement Of Teaching & Learning](#).

All students have access to Office365 through the university. You are encouraged to save your assignments to the Cloud using this program to ensure material is not lost through technological issues. This will not be considered a reason for granting an extension.

Class Communication

Ensure that the course name and number are included in the subject line for all emails. Please make sure emails are written in a professional manner, including complete sentences and do not use text language. Emails must be sent from University of Manitoba email accounts; emails from other accounts (such as gmail) will not be responded to.

Electronic Communication with Student Policy:

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.

Using Copyrighted Material

Dr. John Iacozza and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without written permission by Dr. Iacozza. This includes taking pictures of the slides during the lectures or quiz questions. Course materials (both paper and digital) are for the participant's private study and research. If recording needs to be done for accessibility or accommodation reasons, please contact Dr. Iacozza.

Please respect copyright. I will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. For more information, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact um_copyright@umanitoba.ca.

Academic Integrity

Academic Integrity: Academic dishonesty (plagiarism, cheating) is a very serious matter in any academic institution and is dealt with severely at the University of Manitoba.

Plagiarism or any other form of cheating in examinations, quizzes or academic work is subject to serious academic penalty (e.g., suspension or expulsion from the faculty or university). Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones). Exam cheating can also include exam personation (see below). A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty, including a grade of zero on the assignment/exam, a final grade of F in the course or expulsion from the University (based on severity of offense).

To plagiarize is to take ideas or words of another person and pass them off as one's own. In short, it is stealing something intangible rather than an object. Plagiarism applies to any written work, in traditional or electronic format, as well as orally or verbally presented work. Obviously, it is not necessary to state the source of well-known or easily verifiable facts, but students are expected to appropriately acknowledge the sources of ideas and expressions they use in their written work, whether quoted directly or paraphrased. This applies to diagrams, statistical tables and the like, as well as to written material, and materials or information from Internet

sources. **Students must use APA style to properly reference work. Students will be penalized 20% if another style or footnotes are used.**

To provide adequate and correct documentation is not only an indication of academic honesty but is also a courtesy, which enables the reader to consult these sources with ease. Failure to provide appropriate citations constitutes plagiarism. It will also be considered plagiarism and/or cheating if a student submits an assignment or exam written in whole or in part by someone other than him/herself, or copies the answer(s) of another student in any assignment or exam.

Working with other students on assignments, when not permitted by Dr. Iacozza, can constitute Inappropriate Collaboration and may be subject to penalty under the Student Discipline By-Law.

An assignment that is prepared and submitted for one course should not be used for a different course. This is called “duplicate submission” and represents a form of cheating because course requirements are expected to be fulfilled through original work for each course.

Please familiarize yourself with the University policy on academic dishonesty found on the following website: <https://umanitoba.ca/student-supports/academic-supports/academic-integrity>. When in doubt about any practice, ask Dr. Iacozza.

Students are encouraged to review the University policy on Responsibilities of Academic Staff with Regards to Students (ROASS):

<https://catalog.umanitoba.ca/undergraduate-studies/policies-procedures/responsibilities-academic-staff-regard-students-policy/>

UM Policies and Resources

Students should familiarize themselves with the policies and resources at the University of Manitoba under ROASS (Responsibilities of Academic Staff with Regard to Students). A document has been prepared and is available in UMLearn under the Content Tab. If you have any questions about the policies or resources, please contact Dr. Iacozza. I would be happy to help guide you through anything listed in the document.