

## GEOG/ENST 4351, Winter 2016

### CLIMATE CHANGE

**Instructor:** Dr. Adam Cornwell  
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#### **Course Content**

This is an interdisciplinary analysis of the complex issue of global climatic change. This course provides a detailed investigation of every aspect of one of the most challenging problems of our era: the physics and causes of change, the likely environmental and socio-economic impacts, and the politics and technologies behind mitigation and adaptation.

#### **Course Text:**

Dessler, A. E. (2016). *Introduction to Modern Climate Change, 2<sup>nd</sup> ed.* New York: Cambridge University Press.

There will be required readings chosen from the academic literature and available either through the library or CourseLink.

#### **Evaluation Scheme:**

<b>Midterm Examination</b>	<b>23%</b>	February 10
<b>Seminar Abstract</b>	<b>2%</b>	February 24
<b>Seminar</b>	<b>15%</b>	March 16 – April 1
<b>Summary Paper</b>	<b>10%</b>	April 5
<b>Final Examination</b>	<b>50%</b>	

There will be one term test, plus a final examination. Each student will conduct a 30 minute seminar in class. The seminars will be based on readings that **will be required for all students**. Students will also write an original paper of no more than five pages on the same topic as their seminar.

#### **Lecture Times and Place:**

Wednesday: 11:30 – 1:00 (RC 2005)

Friday: 11:30 – 1:00 (RC 2005)

## **GEOG/ENST 4351 Course Schedule: W15 (subject to changes)**

<b>Dates</b>	<b>Monday</b>	<b>Wednesday</b>
<b>Jan 6 &amp; 8</b>	Introduction	Radiative Forcing
<b>Jan 13 &amp; 15</b>	Ancient Climate Change	Recent Climate Change
<b>Jan 20 &amp; 22</b>	Anthropogenic Forcing	Energy and Carbon Dioxide
<b>Jan 27 &amp; 29</b>	Carbon Cycle	Climate Models
<b>Feb 3 &amp; 5</b>	Global Warming	Sea Level
<b>Feb 10 &amp; 12</b>	MIDTERM	Agriculture
<b>Feb 24 &amp; 26</b>	Water Resources	Forests
<b>Mar 2 &amp; 4</b>	Other Ecosystems	Mitigation, Part I
<b>Mar 9 &amp; 11</b>	Mitigation, Part II	Policy
<b>Mar 16 &amp; 18</b>	Seminars	Seminars
<b>Mar 23 &amp; 26</b>	Seminars	Holiday (no lecture)
<b>Mar 30 &amp; Apr 1</b>	Seminars	Seminars
<b>April 5</b>	Summary	

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## **GEOG/ENST 4351 Individual Projects: W16**

### **Introduction**

4351 is a course loaded with content from the instructor. However, as a fourth year course it is expected that students will seek out exposure to a wider range of knowledge and viewpoints. These seminars provide the opportunity for each student to gain familiarity with an area of current research related to global climate change. *The goal of the project is to present new material to the class and solicit opinions and discussion.*

### **Material**

The basis for each project is *current research*, represented by articles chosen from academic journals and emphasizing ones that were published within the last five years. *This research must go beyond what is covered in the course.*

Your sources should be primarily **peer-reviewed** journal articles. Reports from the “grey literature” (unpublished manuscripts, conference proceedings, government reports, etc.) will be acceptable as **secondary** sources. Web sites and blog posts will generally **not** be sufficient.

Look for articles that cover the same or closely related subjects but also *complement* rather than duplicate each other. Consider both quality and quantity of papers in your research; 4-10 should be sufficient, but you must acquire a good grasp of a subject that is new and interesting.

*You must select one key reading to be assigned to the class in advance of your seminar* so that there is a common starting point for discussion. All students in the class will be expected to read this paper. Please provide the instructor with this reading by **February 10**.

### **Seminar Abstract**

An abstract is a short and pithy summary of a work. The abstract for your seminar will introduce the main topic, the sources of information, and the key findings that will be presented. It should consist of summary statements, not opinions or plans. The abstract must be 250 words or less.

### **Seminars**

You will be allotted 30-40 minutes of class time to share your research with your peers. You may organize your seminar in many ways: presentations, discussions, games, debates, etc. You should *assume that the rest of the class has completed the key reading and come to class prepared.*

Seminars will be evaluated according to the following criteria:

- Was the seminar well-organized? Was it clear that the presenter understood the material?
- Was the material new and interesting? Did the presenter include his/her own insight and opinions?
- Was it pitched at a level appropriate to the class? How well did it solicit participation from the other students?
- Was the delivery professional? Was originality or creativity evident?

You may make use of the presentation equipment in the classroom. Other equipment can be provided if necessary.

Please note that since seminar evaluation depends on class participation, failure to attend a reasonable number of seminars by other students will result in a **deduction from your seminar mark**.

### **Papers**

You will write a summary paper on your seminar topic that is not more than five pages in length (1.5 line spacing; roughly 1500 words). The paper should review material you have collected for that topic, *plus incorporate some viewpoints or consensus from the seminar itself*.

While this is a short paper, it should still have a formal style *beginning with an abstract and ending with a concluding section*. Tables, figures, and the reference list (which will probably be short) are not included in the five page limit.

Remember to cite your sources within your paper! Failure to refer to your sources constitutes plagiarism. All papers are to be fully referenced using the author-date style of referencing (e.g., Hanson et al. 2008). If you are unsure, follow the format described in the Department of Geography and the Environment Undergraduate Thesis Manual, available through the department web site:

<https://www.lakeheadu.ca/academics/departments/geography/thesis>

A short paper may seem like an easier task, but in practice it may seem difficult to distill the material and opinions in your seminar into five pages of content. Focus your writing style.

Papers will be evaluated according to:

- Content
- Analysis
- Writing style
- Formatting and referencing

## **Suggested Topics**

Listed below are some suggested starting points for individual research. **This list is not exhaustive**; you may decide on a topic that doesn't fit any of these categories. Topics will frequently be focussed on a particular region, sector, or ecosystem, but could also have a global scope.

You should discuss your topic with the instructor before the end of January in order to avoid duplication, and to ensure that your topic is relevant and goes beyond the basic course material.

### *Climatology*

- Paleoclimate
- Global observation networks
- Emissions projections
- Climate models

### *Impacts*

- Agricultural impacts
- Forest impacts
- Sea level rise
- Water resource impacts
- Biodiversity
- Biological surprise
- Polar impacts
- Disease
- Economic costs

### *Mitigation*

- Setting targets for emission reductions
- Policy mechanisms
- Ethics and politics
- International cooperation
- Public perspectives