UNIVERSITY OF WATERLOO
GEOG 474/675
Climate Change and the Health of Canadians
Winter 2017

Instructor: Peter Berry
Room:
Phone Extension:
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Lectures: Fridays 11:30am - 2:30pm
Lecture Room:

Note: Classes begin week of January 2, 2017

[Note: Students participating in the field trip to Ottawa must pay their own accommodation and food, and must contact the instructors of any courses affected by absence from campus in order to make arrangements. Any students who do not participate in the field trip to Ottawa will complete an alternative assignment rather than work on the group presentation.]

Course Description

> *"Climate change is considered the biggest threat to health of the 21st century"*
>
> *"Tackling climate change could be the greatest global health opportunity of the 21st century"*
>
> Lancet Commission on Climate and Health, 2015

In recent years the public health community within and outside of Canada has begun to recognize the very serious threats to human health and well-being from climate change. Health officials are also beginning to understand the potential to significantly improve health through concerted and well planned efforts to mitigate greenhouse gas emissions and to adapt to the expected impacts. Scientific evidence from recent climate change and health assessments indicates that risks to the health of Canadians are growing as the rate of climate change accelerates and a number of impacts are already being observed (Berry et al., 2014; Health Canada, 2008). Increased risks are associated with greater morbidity and mortality related to an increase in the frequency and severity of extreme weather events (e.g., extreme heat, floods, hurricanes, wildfires, ice storms and droughts), increases in illnesses and deaths due to poor air quality, food- and water-borne illnesses and the expansion of vector-borne and zoonotic diseases. Climate change can affect health risks from both zoonoses (diseases transmitted from animals to humans) and vector-borne diseases (VBD – diseases transmitted either human-to-human or animal-to-human by arthropod vectors). In fact, the tick vector that causes Lyme disease is spreading into Canada at a rate of 35-55km per year and human cases are increasing as well.

Recent extreme weather events have led to health disasters in a number of countries that were unprepared or unable to respond to them. The 2003 heatwave resulted in an estimated 70,000 excess deaths and the 2010 Russian heatwave caused 55,000 deaths (Robine et al., 2008; Barriopedro et al., 2011). Recent heatwaves in India and Pakistan have caused over 2000 deaths. In Canada, climate change increases the

probability of complex emergencies and system failures and makes it more difficult for Canadians and communities to prepare for them.

In recent years, greater efforts have been taken by public health and emergency management officials and non-governmental organizations to better prepare Canadians for climate change impacts on health (Paterson et al., 2012; Poutiainen et al., 2013). Evidence suggests that climate change and health adaptation measures can protect people, particularly the most vulnerable in society. Implementation of the heatwave and health alert system in France (Système d'alerte canicule et santé) after the very severe extreme heat event of 2003, significantly reduced the health impacts of subsequently strong heat events in 2006, 2009 and 2010 (Ministère du Travail, de l'Emploi et de la Santé 2011). Recent studies in Toronto and Montreal have demonstrated that heat-health communications can influence the public to take protective measures during extreme heat events.

Protecting Canadians from the future impacts of climate change requires concerted efforts by public health officials at all levels of government to collaborate with leading experts in academia, non-governmental organizations, and decision makers in other sectors. Risks can be reduced through monitoring of the climate-related health burdens, assessments of health risks and vulnerabilities, the development of innovative tools to adapt and efforts to achieve health co-benefits from greenhouse gas mitigation technologies and measures.

THE COURSE AND OBJECTIVES

With this background, this course is based around the idea that scientific evidence of health impacts and effective adaptations along with strong collaborative partnerships are required to make progress in efforts to reduce health risks to Canadians. The goal of the course is to examine recent evidence of climate change impacts on the health of Canadians and to explore practical solutions for building resiliency among Canadians and the health sector. With these issues in mind, the course examines the risks to health from climate change, methods and examples of vulnerability assessment and actions being taken to prepare Canadians through lectures, discussions, and assignments.

The course is designed for students interested in: (a) understanding challenges facing societies from climate change; (b) attaining experience translating scientific information into policy and program relevant solutions by working on and presenting case studies; and (c) Canadian and international perspectives on climate change and health issues. The broad goal of the course is to inspire interest in and critical thinking around needed efforts to build healthy, climate resilient communities in Canada.

REQUIRED TEXT/READINGS: Readings for the class are available through the University of Waterloo library or will be provided in class as handouts.

GRADING

1. **Class participation – 10%**
2. **Issue Brief - 20%**
3. **Group presentation – 20%**
4. **Submitted Final Report – 50%**

WEEK BY WEEK OUTLINE

Jan 6, 2017 - [Week 1] – Introduction to the Course

Jan 13, 2017 [Week 2] – Climate Change and Health Overview (Remote from Ottawa)

Jan 20, 2017 [Week 3] - Assessing Health Vulnerability and Adaptation

Jan 27, 2017 [Week 4] - Abrupt Climate Change: Impacts and Uncertainty

Feb 3, 2017 [Week 5] Responding to Climate Change Through Mitigation and Adaptation

Feb 10, 2017 [Week 6] – NO CLASS

Feb 17, 2017 [Week 7] - Public Health Adaptation to Climate Change Impacts (Remote from Ottawa)

Feb 24, 2017 [Week 8] – NO CLASS

March 3, 2017 [Week 9] - Preparing the Health Sector in Canada

March 10, 2017 [Week 10] - Health Adaptation Planning - Interjurisdictional and Multi-sectoral Collaboration

Mar 17, 2017 [Week 11] - Communicating Climate Change to Protect Health (Remote from Ottawa)

March 23-24, 2017 - Field trip to Ottawa. Students will travel to Ottawa March 23-24 to meet with decision makers and researchers in various federal government climate change impacts and adaptation programs including Health Canada, Indigenous and Northern Affairs Canada, Natural Resources Canada and Environment and Climate Change Canada. Students will make group presentations to decision makers on their respective projects.

CLASS FORMAT
The format of the classes will vary from week to week. The usual format will include:
Lecture – ranging from 30 minutes to 1 hour
Break – 10 minutes
Possible Video – ranging from 10 minutes to an hour
Group Work, Discussion, Group Presentations – 1 hour to 1.5 hours

COURSE WEBSITE/BLOG
Materials for the class (i.e., copies of lecture-slides, course outline, assignment/exam materials) will be made available through a course website. The website will only be used for posting these materials. Any announcements not made in class will be sent directly to your emails.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: http://uwaterloo.ca/academicintegrity/ ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students: http://uwaterloo.ca/academicintegrity/Students/index.html

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also complete the following tutorial: https://uwaterloo.ca/library/get-assignment-and-research-help/academicintegrity/academic-integrity-tutorial

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71. Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy 70, Student Grievance: https://uwaterloo.ca/secretariatgeneral-counsel/policies-procedures-guidelines/policy-70

Note for students with disabilities: AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Mental Health: The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available**. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counseling Services http://www.uwaterloo.ca/counselling-services is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counseling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

Religious Observances: Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

Appeals: A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

Unclaimed Assignments: Unclaimed assignments will be retained for … [period of time*; or: "until one month after term grades become official in quest"]. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.

Communications with Instructor and Teaching Assistants: All communication with students must be through either the student's University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account.

Recording Lectures: Use of recording devices during lectures is only allowed with explicit permission of the instructor of the course. If allowed, video recordings may only include images of the instructor and not fellow classmates. Posting of videos or links to the video to any website, including but not limited to social media sites such as: facebook, twitter, etc., is strictly prohibited.