Faculty of Environment, Department of Geography and Environmental Management, University of Waterloo

GEOG 307 Societal Adaptation to Climate Change
Winter 2020 Monday and Wednesday 1:00-2:20 AL 211

Instructor: Sarah Burch, EV1-231 (office hours Tuesdays 3-4:30 or by appointment)

Introduction:
Global climate is changing. From bushfires in Australia, species extinction in the Amazon, floods in Bangladesh and a shifting growing season in Canada, the impacts of climate change affect communities around the world in vastly different ways. The Intergovernmental Panel on Climate Change (IPCC) scientific assessment process has established a deep consensus that the Earth's climate system has demonstrably changed since the pre-industrial era. Furthermore, many of these changes are attributable to human activities – specifically, the 90% increase in human emissions of greenhouse gases (GHG) has led to high confidence that climate has warmed since 1750 and will continue to warm throughout the coming years.

Actions in response to climate change can be placed in two broad categories: mitigation and adaptation. Mitigation focuses on anthropogenic (human-caused) GHG emissions as a root cause of climate change, and associated efforts of emission reduction. It has now become clear that both global and local mitigation efforts have not led to the hoped-for climate stabilization that would allow us to avoid significant climate change impacts. Consequently, increasingly more research and policy efforts are being devoted to the adaptation side of the problem.

Adaptation, simply put, is what we do about climate change given the unequivocal evidence that climate change is happening, and will continue to happen. Broadly speaking, adaptation includes both adjustments to changed conditions, including extreme events, and planning ahead for a "new normal". Early adaptation research generally focused on impact assessment based on the notion that if we know what is coming, we can prepare for it. In recent years, the field has come to include questions of vulnerability, human security, and "mainstreaming" adaptation into other policy initiatives.

Course Objective:
This course is designed to give students a strong background in the current themes and contemporary debates on adaptation as a human response to climate change.

Learning Modes, Course Format and Evaluation:
This course uses a mixture of instructor-led lecturing and class discussion. Students are required to familiarize themselves with major issues through weekly readings. The learning outcome of this course is a solid scholarly background to apply critical thinking skills to ongoing work in the adaptation to climate change field.

A major component of this course is your own participation in the class discussions, both instructor-led and peer-led. There is a take-home final exam to be completed during the 7 days immediately following the conclusion of the course. You are expected to draw on the references and case studies used throughout the term to complete this.

Assessment

	Assignment	Percentage of grade	Due dates
1.	Vulnerability assessment	20%	January 29
2.	Media analysis	15%	February 26
3.	Group presentations (10%) and accompanying materials (10%) plus peer evaluation (5%)	25%	Week 10 and 11
4.	Take-home final exam	30%	Posted on Learn on April 1. DUE April 8th by 4:30pm.
5.	Participation – includes participation in discussions, in-class activities and discussion leadership	10%	Throughout term

**A penalty of 10% will be assessed for each day that assignments are submitted after the due date based on a 24 hour clock starting at 4:30pm on the due date.

1. Vulnerability Assessment (20%) – Due January 29th by 4:30pm on Learn

Choose a community and give a rough sketch of its key aspects (ie demographics, geography etc). Answer the following questions in approximately 1500 words (+/- 10%):
1. What *conditions* have posed problems in the past/what are the relevant conditions? What problems are currently being dealt with?
2. How have peopled *coped* with conditions in the past? How are they coping now? How effective are current strategies?
3. What *change* is expected in relevant conditions in the future (climate change and other)?
4. Conclude with a clear summary of the community's vulnerability to climate change impacts (currently and/or over a particular time frame in the future).

Please cite scholarly and 'grey' (ie government or think tank reports) literature to bolster your analysis (both embedded citations and full bibliography are required). Images and

graphs/figures are very welcome. Be as concise and clear as possible and ensure that you answer all questions.

2. **Media Analysis (15%) – Due on February 26th by 4:30pm on Learn**

Select a particular theme (e.g. coverage of extreme events; adaptation funding; climate change and food security; climate change and migration…) and **review** media coverage over a time period that makes sense for this theme. Once you have read widely, **refine** your media analysis to a question, and then **critically review** how the media frames answers to this question. For example, you may be interested in water supply in California, or drought in developed nations. After tracking media, you notice a change in how California's drought was portrayed during the very high snow winter of 2016-2017. You might now come up with the question: "Is California's drought over?"

In your media analysis, you would review how portrayal of the issue changed as a result of the winter of 2016-2017, and cite evidence that in popular press, there were two types of messages – one that proclaimed the drought to be over because of the high snowpack in the Sierra Nevada mountains and the fact that all the reservoirs were full, but another message which considered groundwater supply and cautioned that recovery in groundwater is modest at best. You might summarize what types of data the articles cite as evidence (precipitation data vs long term well data), or if they attribute causes of drought merely to precipitation or link it to withdrawals from agriculture (i.e. what do they consider drought is).

Your theme must fit under the broad umbrella of "adaptation and vulnerability" (i.e. you cannot write about emissions trading or GHG reductions). Write a 1000 word (maximum, excluding references) paper which critically summarizes media treatment of your theme over a selected time period. You are encouraged to incorporate peer-reviewed and other sources of information as appropriate (in the example above, you might introduce some well data from the United States Geological Survey (USGS) and a 2017 peer reviewed book chapter which summarizes the California drought), but the focus of this paper is **to synthesize the messages** the media is sending on what defines a drought/how the issue is framed, and when it is over. **Consider the implications** of these different messages and frames.

Please source media – title of the article, date, and media source is enough, e.g.: "How climate change is behind the surge of migrants to Europe", *Time*, 7 Sept. 2015.

Please read Boykoff and Yulsman (2013) as an overview of media and climate change before beginning. Gould (2004) contains useful tips on writing a media analysis, as will the in-class session. For an example of a published media analysis, see Wang et al., 2017 – this is much more details and rigorous than you will produce, but is a helpful reference.

3. **Group presentations and activity (25%): Developing an adaptation action plan for a Canadian community – Presentations DUE on March 16th, 18th, 23rd and 25th; slides and accompanying materials due before class on day of presentation**

In groups of 4-5, develop and deliver a presentation that outlines the key impacts and vulnerabilities in a Canadian community (current and in the future). Design and describe three potential adaptation strategies for the most important impacts, including who needs to deliver the action, the time frame over which the action must occur, and who will benefit/pay. Design an accompanying activity or discussion for your classmates to enhance the presentation.

Try to be creative and engaging with your activity, and prepare materials to go along with it. Powerpoint (or other format) slides and activity materials must be submitted by one group member (on behalf of the other members) via Learn. You will have 20 minutes of class time to offer both your presentation (10 minutes) and your activity/discussion (10 minutes). This is *no time at all* so be very strategic and polished.

You should be taking notes to help you design your presentation and activity throughout the course, using lectures, readings, and class discussion.

4. **Take-home final (30%) – Posted on April 1st DUE via Learn on April 8th at 4:30pm**

Cumulative based on all course topics covered. You will be given a choice of questions. Marks will be given for: technical accuracy; strength of argument (ie logic, flow etc); proper citation practices, editing, and structure. You must undertake a more extensive treatment of the issue than we covered in class, including illustrative examples. It is expected that you draw on significant literature **beyond** assigned readings. Questions will be posted on Learn on the last day of class, and your responses are due one week later.

5. **Participation (10%) – Throughout term**

In order to meet its objectives, this course relies on guided discussion among participants – and it is not possible to make meaningful contributions to this discussion without appropriate preparation. You are required to do the readings in advance of the class, and make notes on your discussion points. The 10% participation grade is based on your **willingness** to participate, and evidence of both ***preparation and critical thinking*** when you do so. Participation includes respect for and engagement with your colleagues – excellent participation furthers the discussion and develops points collaboratively.

Readings

Each week there is at least one required reading and one supplementary reading. These will be discussed in class, either by me or by your colleagues. All are available on Learn. If changes are made to the reading list, the class will be given sufficient advance notice.

Course Schedule and Readings

Date	Topic	Readings
Week 1 (Jan 6 and 8)	**Course introduction and key concepts** Part 1*:* term goals and objectives; impacts, adaptation and vulnerability as concept Part 2: refresher – key climate change impacts, UNFCCC	**Required**: IPCC 5th WGII Assessment Report Summary for Policymakers, 2014. Schipper, 2006
Week 2 (Jan 13 and 15)	**Adaptation – who, how and when?** Part 1: What do we mean by adaptation? Who adapts? Part 2: When does adaptation occur? At what scale?	**Required**: Klein 2011 Noble et al, 2014 (IPCC AR5 WGII Chapter 14). Suggested: Smit et al 2000
Week 3 (Jan 20 and 22)	**Assessing vulnerability** Part 1: why assess vulnerability, vulnerability in UNFCCC Part 2: top down, bottom up and integrated assessments	**Required:** Eriksen et al 2015 Smit and Wandel 2006 Suggested: Dilling et al 2015 McCubbin et al. 2015
Week 4 (Jan 27 and 29)	**Adaptation planning in cities** Part 1: Impacts in cities Part 2: Nature-based solutions and other experiments	**Required:** Mukheibir and Ziervogel, 2007 Revi et al, 2014 – **Section 8.2 and 8.3 only** Suggested: Spires and Shackleton, 2017

		ICLEI BARC (refer to this for Assignment 4. Group Presentation) **Assignment 1: Vulnerability Assessment DUE Jan 29**
Week 5 (Feb 3 and 5)	**Paying for adaptation** Part 1: Costs of adaptation Part 2: Adaptation funding Media Analysis Session	Steckel et al 2017 Thistlethwaite, 2018 NYT article (2019) – Rich countries get more help
Week 6 (Feb 10 and 12)	**Adaptation and development** Part 1: Adaptation deficit; adaptation and Development Part 2: Mainstreaming, adaptation pathways	TBD
Week 7 (Feb 24 and 26)	**Conflict and justice** Part 1: Climate change as a risk multiplier; justice and equity Part 2: Guest lecture: Prof. Jasmin Habib	**Assignment 2 Media Analysis DUE Feb 26**
Week 8 (Mar 2 and 4)	**Communicating about climate change** Part 1: Worldviews and values Part 2: Strategies, trusted messengers, and public participation	TBD
Week 9 (Mar 9 and 11)	**Considering the future** Part 1: Foresight and the future in climate change adaptation planning Part 2: Visualizing adaptation	TBD
Week 10 (Mar 16 and 18)	**Group presentations: Part 1** Monday: Groups 1, 2 and 3	No new readings

	Wednesday: Groups 4, 5 and 6	
Week 11 (Mar 23 and 25)	**Group presentations: Part 2** Monday: Groups 7, 8 and 9 Wednesday: Groups 10+	No new readings
Week 12 (Mar 30 and Apr 1)	**Limits to Adaptation** Part 1: Maladaptation Part 2: Transformational Adaptation Course evaluations	TBD

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. [Check the Office of Academic Integrity for more information.]

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. Read Policy 70, Student Petitions and Grievances, Section 4. When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check the Office of Academic Integrity for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline. For typical penalties, check Guidelines for the Assessment of Penalties.

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.

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.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.