ENR 7380: Climate and Society
Autumn 2015
3 Credits

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Office hours by appointment

Class sessions
Wednesday: 2:15-4:55
Kottman Hall 382

Prerequisites: Graduate standing or permission of instructor (upper division undergraduate students interested in this course are encouraged to contact the instructor)

Overview
This course examines the links between climatic changes and human societies and examines social influences on our current state of knowledge, impacts, and potential responses.

Expanded description
Considerable research indicates the climate system is changing with ongoing and projected future impacts on water and food availability, timing of life cycle events (e.g., flowering and migration), weather patterns and extreme events, among others. While responses to any environmental problem must be based on our best scientific understanding of the natural world, solving large and complex problems also requires attention to their human dimensions. In a recent review of the U.S. investment in global change research, the National Academies of Science stated that while there had been substantial advances in our basic understanding of climate science, there was limited progress applying this knowledge to address resulting impacts (NRC 2007). The committee concludes this lack of progress is due to limited support for social science research, insufficient interdisciplinary research, and a lack of established networks between scientists and decision makers (NRC 2009). In this course, we will draw upon the existing research on global climate change and examine the influence of factors including 1) communication of complex information and scientific uncertainty, 2) social construction of complex problems, and 3) public values, attitudes, norms, and understanding on potential responses. We will apply class concepts to ongoing policy discussions at the domestic level as well as the international negotiation process.

Learning outcomes
After completing this course, participants will be able to:
• Describe the role of the natural and social sciences in developing an understanding of global climate change and potential responses.
• Describe interactions between the practice and communication of science (social and natural) and the development of policy/management responses including how social and political factors can influence how science is conducted, interpreted, and communicated.
• Apply critical thinking skills to examine the current state of knowledge, identify research gaps, and discuss potential approaches to mitigate and adapt to the changing climate.
Course format and expectations
Classes will include a variety of instructional strategies including participatory lectures, guest speakers, discussion, and small group activities. Because of the interactive nature of this course, students are expected to attend class sessions prepared (defined as having read and reflected upon readings and course content) and actively participate in class discussions. Participation will be observed throughout the term and counted towards the course grade (see below). Some classes will include participation from guest speakers, it is particularly important that you come to class prepared to actively engage in class discussion during these sessions.

While class sessions will involve an active and vigorous exchange of ideas, participants are expected to demonstrate respect for one another at all times. Disrespectful comments or interactions will not be tolerated.

Readings
Required readings for this course are listed in the schedule below and posted on the course Carmen website. Readings are to be completed prior to the class period for which they are assigned.

Grading
A total of 300 points are possible for this course. The table below demonstrates the minimum percentages required for each grade level.

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Assessment tasks
Grades will be based on performance on the following activities. Late assignments will be docked one letter grade for each day past due.

• Class participation (40 pts possible): Your active engagement is required for the success of this class. Regular attendance is necessary, but not sufficient on its own. Students are expected to be active participants in discussions, activities, and interactions with guest speakers. Students must also adequately prepare for and participate in the negotiation activity in week 12.

• Reflections on readings/course concepts (8 X 5 = 40 pts): On designated weeks (noted on course schedule) you will develop a brief (300 words or less) critique, analysis, or reflection on course material. Reflections are due, in hard copy, at the beginning of class on the assigned day (late submissions will be docked one letter grade) and should further explore concepts raised in class readings and discussions, integrate concepts across readings and class sessions, and demonstrate application of course concepts. Some of these will have assigned topics while others will be “open” for you to select the topic of your choice. In each case, I will expect your
reflection to present your original, critical analysis, and not merely describe a point of view - yours or someone else's. I expect your writing to be clear, succinct, logically organized, and free of grammatical or spelling errors. We will discuss reflections at the beginning of class (this will often involve sharing your reflection with another student for feedback and discussion).

• **Briefing memos (2 X 10 = 20 pts):** Briefing memos are used to summarize scientific findings and provide a recommendation for policy or management action. This is often a challenging task for scientists given the limitations posed by the short length and the intended audience (e.g., typically non experts in topic area). You will develop two briefing memos (submitted in weeks 2 and 12). Guidelines and an example memo are available on Carmen. *Note: memos should not exceed 1 page in length.* Students should bring two copies to class (one to share and discuss with classmates, one to submit).

• **Climate impacts summary and presentation (40 pts):** In week 4, students will work in teams to provide a summary of the current state of knowledge in a particular topic area (selected from a list of potential topic areas). Everyone is expected to contribute equally and students will assess the contributions of teammates. Guidelines and a template for the Summary will be available on Carmen. Summaries should be submitted to Carmen under the appropriate “Discussion” section by 12:00 PM on the day they are due to allow other students to access them prior to class. *Bring one copy per team to class to submit for grade.*

• **Discussion Leader (40 pts):** During specified weeks, students will work in teams to lead the discussion of selected readings. Students will select the week they choose to serve as a Discussion Leader. Working together, students will be responsible to facilitate class instruction regarding the material presented in the paper. Everyone is expected to contribute equally and students will assess the contributions of teammates. Students should plan on develop enough material for approximately 60 minutes and include a lecture and interactive component. Dr. Toman will provide additional information about content and suggested activities. Students should sign up to lead the discussion for one of the selected days prior to the second class session through the appropriate “Discussion” on Carmen.

• **Climate literacy tool (40 pts):** In week 10, students will submit an original project designed to build the climate literacy of policy-makers, decision-makers, or the lay public. Draft projects will be discussed in week 7; students should be far enough along that students can provide a draft of their tool and discuss with class members. Examples are provided on Carmen. Final products are due in week 10 and can be submitted electronically or in class as needed for your specific tool.

• **Final project (80 pts):** For the final project, students may complete either of the options below. The first of these, the **Integrated proposal,** will be completed in teams with other students in class. The second option, the **Synthesis paper,** will be completed by students individually. We will discuss these options further in class and students will need to decide on which option they will pursue by class in Week 5. Both options will be due by 5:00 PM on Monday 12/14/15.

  o **Integrated proposal:** Working in teams of 3 – 4, students will identify an area of interest with relevance to class topics and develop a brief project proposal that illustrates how the project will be carried out. Specifically, the proposal should include:
• Develop a central research question related to this issue; this question should be integrated and require engagement of multiple scientific disciplines.
• After agreeing on the central research question, teams will develop specific research objectives and hypotheses. These objectives need to make clear contributions to the central research question and the hypotheses need to be testable through one or multiple disciplines or could be addressed through one individual discipline.
• Contributors to each objective will articulate the expected outcomes (specific data, models, etc.) and impact of the proposed work.
• Students will reflect on their central research question and whether the research expertise represented among team members is sufficient to address the full scope of the central research question and, if necessary, identify other research disciplines they currently lack and may need to invite to join the team.

○ **Synthesis paper:** You will develop a paper that illustrates application of course concepts and their extension beyond the material covered in class. This paper will involve gathering additional information on a question of interest to provide a more in-depth examination of the issue and related psychological, social, and/or institutional influences and recommendations. The paper is expected to be 8-10 pages in length (double-spaced). We will have a roundtable discussion of ongoing student projects during our final session; each student will be expected to discuss their project topic and initial findings. Students must submit their proposed topic area to the instructor by week 9.

**Absences**
As this course is primarily discussion based and only meets once a week, your attendance at each class session is critical. All absences must be approved by contacting the instructor *prior* to the class session you plan to miss. Unexcused absences will result in reduced participation points.

**Academic misconduct**
Academic dishonesty will not be tolerated. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

• *cheating:* use or attempted use of unauthorized materials, information, or study aids;
• *fabrication:* falsification or invention of any information;
• *tampering:* altering or interfering with evaluation instruments and documents; or
• *plagiarism:* representing the words or ideas of another person as one’s own.

You must write in your own words. Cutting and pasting blocks of text from sources is plagiarism. You may quote from source material, but the quote must be brief and cited according to recognized citation guidelines. Ask in advance if you are uncertain regarding the appropriate use of material from other sources. **Penalty for academic dishonesty may result in failing the course and additional University disciplinary action.**

**Special needs**
Accommodations will be made for university-approved special needs. Notify instructor during the first two weeks of the semester.
Course schedule
See below for the preliminary schedule of course topics, readings, and assignments. Guest presenters may join us in person or via videoteleconference for some classes (invited speakers are noted below). The schedule may be adapted based on availability of speakers and class needs and interests. Readings are to be completed prior to the class session for which they are assigned and are available on the course Carmen website.

Week 1: Introduction
Discuss course: 1) outcomes/expectations, 2) background/goals of participants, 3) assignments, and 4) schedule.
- What is climate change and why is it important that we do something?
- What can be done about it (mitigation and adaptation)?
- What is being done about it (big picture--illustrating history and current organization-science, domestic policy, and international negotiations)? Interested parties and scales of responses.

Assignments
- Assign teams and presentation topics for week 4 (projected impacts in Ohio/Midwest U.S.; list of resources to use as starting point posted on Carmen)

Week 2: State of science...known knowns, known unknowns, unknown unknowns
Invited guest speaker-Bryan Mark, Associate Professor, The Ohio State University, Department of Geography and Byrd Polar Research Center.
- The state of climate change science
- Alternative hypotheses and conclusions
- Remaining gaps and uncertainties

Readings
IPCC, 2013: Climate Change 2013: The Physical Science Basis. Working Group 1 Contribution to the Fifth Assessment Report of the IPCC. Geneva, Switzerland. (Read-Summary for Policy Makers and scan the Introduction (pay attention to how key terms and how treat uncertainty.)


Assignments
- Briefing memo: Summarize state of science for policy makers. Describe state of knowledge, level of certainty, and conclude whether this current state of knowledge warrants action.

Week 3: Philosophy of Science; Science – Policy Interface
Introduction to philosophies of science, coupled human and natural systems, and wicked problems.

Readings


Assignments
Open reflection on class concepts, readings, and/or discussions to date

Week 4: Regional / Sectoral impacts
State of science regarding regional and sectoral impacts from climate change. Student presentations on select topic areas.

National to Regional climate projections—Student presentations on following topics (one team per topic)
1. Water Resources: Describe projected impacts on water quantity and quality in the U.S., the Midwest, and Ohio (SAP 4.3, ch. 4; Pryor et al. 2014 – Key messages 5 and 6; Georgakakos et al. 2014)
2. Agriculture: Describe the projected effects on agricultural and forest productivity in the U.S., the Midwest, and Ohio (SAP 4.3, ch. 2; Pryor et al. 2014 – Key messages 1 and 2; Hatfield et al. 2014)
3. Ecosystems: Describe projected expected effects on ecosystems in the U.S., the Midwest, and Ohio (SAP 4.3, ch. 5; Groffman et al. 2014)
4. Public health: Describe projected public health challenges in the U.S., the Midwest, and Ohio (SAP 4.6, ch. 2; Pryor et al. 2014 – Key message 3; Luber et al. 2014)
5. Energy use/production: Describe projected impacts of climate change on energy use and production (SAP 4.5, ch.’s 2 and 3; Pryor et al. 2014 – Key message 4; Dell et al. 2014)

*Use the above as a starting point, but feel free to identify and use other resources as well, use the above as a starting point for your review. See the National Climate Assessment Website for additional information.

Readings
Everyone read:
National Climate Assessment. Available at: http://nca2014.globalchange.gov/ (read the Highlights / Report Findings – review the findings in the 12 areas listed here)
Assignments

- Student presentations: Follow guidelines on Carmen for in-class presentations.
- Summary of topic area: Following guidelines provided on Carmen, each team will develop a summary of on your selected topic area. One summary will be submitted per team. **Summaries should be posted to the appropriate Carmen “Discussion” by 12PM the day of class.**

Week 5: Contributions from the social sciences (Groups)
Introduce social science disciplines; discuss contributions of sociological research to understanding climate change and potential responses.

Readings


Assignments
Open reflection on class concepts, readings, and/or discussions to date Assigned Discussion Leaders – lead discussion of 1) Wynne and 2) Kollock.

Week 6: Contributions from the social sciences continued (Individuals)
Discuss contributions of psychological research to understanding climate change and potential responses.

Readings


Leiserowitz, A. 2006. Climate change risk perception and policy preferences: The role of affect, imagery, and values. Climatic Change 77: 45-72. (Discussion led by assigned Discussion Leaders)

Assignments
Open reflection on class concepts, readings, and/or discussions to date
Assigned Discussion Leaders – lead discussion of 1) Leiserowitz and 2) Griffin et al.

Week 7: Where are we now? - Public awareness, attitudes, and influencing factors
Discuss current attitudes, levels of support for action in U.S.

Readings


Assignments
• Prior to class, use the questions posted on Carmen to interview 5 non-classmates regarding their beliefs about climate change.
• Complete reflection on your interviews.
• Draft of climate literacy tool to discuss with classmates.

Week 8: Communicating climate change; Media effects – Agenda setting and Balance
Communication across boundaries and the role of the media in reporting climate change information


Assignments
Open reflection on class concepts, readings, and/or discussions to date

Week 9: Domestic Policy – Mitigation
Discuss current state of climate policy in the U.S. with an emphasis on mitigation.


Assignments
Open reflection on class concepts, readings, and/or discussions to date
Submit draft paper topic
*Assigned Discussion Leaders* – lead discussion of 1) Wynne and 2) Kollock.

Week 10: Adaptation in the U.S.-Science and Policies
Invited guest speaker-Laura Petes (National Oceanic and Atmospheric Administration)
Discuss ongoing efforts to support climate adaptation.

Readings


Assignments
Submit final Climate Literacy Tool.
Week 11: International negotiations
Discuss history and current status of the UN Framework Convention on Climate Change negotiating process.

Readings


Read news summaries of recent Conference of the Parties (COP) meetings posted on Carmen.

Assignments
Open reflection on class concepts, readings, and/or discussions to date.

Week 12: Model UNFCCC negotiation activity
Complete in-class negotiation activity following guidelines posted on Carmen.

Readings
Complete readings specific to assigned role prior to class.

Assignments
Prepare for in-class negotiation activity including completing readings, identifying negotiating positions, and developing alliances as appropriate. Briefing memo: use to summarize your negotiating position and supporting evidence (follow format provided on Carmen)

Week 13: Incorporating climate change in planning and decision-making (11/14/12)
Invited guest speaker-Cat Hawkins, Adaptation Director, Climate Change Response Program, DOI National Park Service

Readings


Assignments
Complete reflection on challenges and opportunities to integrate climate change in planning and management activities

Week 14: Where do we go from here?
Review and summarize concepts, discuss implications
Roundtable discussions of student projects

Readings

Assignments
Complete course evaluation form on Carmen to evaluate course; submit hard copy to remain anonymous.

Final projects due by 5:00 PM on Monday 12/14/15