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POLS 332: Climate Change: Policy and Politics - A Peer Review of Teaching Project Benchmark Portfolio

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POLS 332: CLIMATE CHANGE: POLICY AND POLITICS

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ABSTRACT

This benchmark portfolio *i)* provides and overview learning objectives of and pedagogical techniques used in POLS 332 Climate Change: Policy and Politics; and *ii)* assesses student learning in the course. The course is an upper-level undergraduate course designed to provide students with the ability to follow and actively participate in current climate change policy debates. The course seeks to leave students well versed in both domestic and international policy settings, to provide them with the ability to identify critical assumptions that can alter policy outcomes, and to bestow students with significant understanding of current climate policy. The course is inter-disciplinary in nature (political science, economics, climatology) and attracts students of various majors. The portfolio relies on student evaluations and summative assessments to evaluate general student learning. In addition, the portfolio will provide more in-depth assessment of teaching effectiveness with respect to a single course learning objective based on pre-test surveys and qualitative assessment of essay responses. Overall, students perform well relative learning objectives and consider group discussions and activities particularly beneficial to their learning. Finally, the portfolio reflects on future course improvements.

Key terms: teaching, climate change, public policy, backward design

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OBJECTIVES OF THE PEER REVIEW PORTFOLIO

This benchmark portfolio *i)* provides and overview learning objectives of and pedagogical techniques used in POLS 332 Climate Change: Policy and Politics; and *ii)* assesses student learning in the course.

Course Selection

POLS 332 was selected for three reasons: i) the pressing nature of the course topic, ii) the inter-disciplinary nature of the course, and iii) the course being a new curriculum development.

Course Topic – climate change is arguably one of the greatest collective action problems humanity faces and is predicted to worsen various other public problems. Most importantly, with regard to course and portfolio objectives, the brunt of the problem will accrue to the current student population. It is hence important that students understand the problem and the context in which policy is constructed. Understanding this policy context in particular allows students to more actively engage in this policy area, if they so desire, and/or assess why this problem remains even though the global community has been actively working on it for the past thirty plus years. As a result it is important to ensure that students complete the course with a solid understanding of the subject and policy-making.

The Inter-disciplinary Nature of the Course – the course combines material and insights from a number of disciplines (political science, economics, climatology, philosophy). Drawing on various disciplines gives students a better sense of how policy (reliant on the expertise from many disciplines) is constructed. However, this comes with its own set of challenges; students sometimes feel overwhelmed by and disengaged with material from a discipline in which they have little formal training. In addition, inter-disciplinary material makes it more difficult to provide a connecting line between different components to provide students with a coherent overarching view of the problem of climate change. This portfolio allows me to explore ways to provide a thread to guide students through the climate policy maze.

New Curriculum Development – POLS 332 is a new curriculum development[1] and as such the portfolio allows for assessing course refinement needs which may have already taken place in courses that have been offered for numerous years. This is particularly relevant for this particular course given its inter-disciplinary nature; the boundaries of climate policy (as a course) are not well defined and there is little issue-specific theory. While that provides the instructor with significant choice as to how to structure the course, it also provides little guidance. The portfolio will allow me to carefully interrogate my learning goals and whether the assignments and assessments truly result in these outcomes.

Portfolio Goals

In compiling this portfolio I have three goals: i) refine my course development process, ii) document teaching effectiveness, and iii) showcase POLS 332 given its status as a new curriculum development.

[1] The course was originally offered as a special topics class in the Spring 2017 semester. It has since been integrated into the Political Science curriculum and is being offered every spring. The Spring 2020 installment of the course is the fourth time that the class has been offered.

Course Development Refinement – By using backward design processes and critically assessing how I have compiled courses in the past, I seek to develop meaningful course learning objectives, and improve the effectiveness of my class activities. I intend to use insights developed in my other courses to move beyond class-to-class thinking, toward meeting overarching learning goals for my students.

Documenting Teaching Effectiveness – I seek to use this portfolio to evaluate in how far my students meet the learning objectives I have outlined. In addition, I intend to use this documentation of student learning and teaching effectiveness to supplement my teaching component of my tenure file. The purpose is to record measures of teaching success beyond student evaluations. While I will assess general teaching effectiveness for POLS 332 I will particularly focus on evaluating learning in regards to what I consider a critical learning objective of the course, Learning Objective 1.2. This learning objective is central to understanding climate policy and the core insights are important to understanding (regulatory) policy-making in general (find a more detailed explanation of the importance of this learning objective here).

New Curriculum Development – As discussed above, POLS 332 is a new curriculum development that I initiated. I thus see the portfolio as an opportunity to showcase my teaching approach, unique features of the course, and my teaching interests. In addition, the course meets some of the University's sustainability teaching goals (e.g., Infusing Sustainability into the Curriculum Program) – this might allow the portfolio to be used as evidence for progress towards these goals and as a means to motivate additional sustainability related courses.

Given these portfolio goals, the envisioned portfolio will provide a broad overview of the course while highlighting individual assignments and assessments to demonstrate teaching effectiveness.

A Note about Mid-semester Transition to Online Only Teaching – Following the spread of COVID-19, the University transitioned all in-person classes to an online only format the week before spring break. This resulted in a number of changes to the course structure and class activities, which as a result limited some of the intended analysis. Additional sections and notes concerning these changes have been added to the documentation below.

DESCRIPTION OF THE COURSE

Course Goals and Learning Outcomes

The main goal of the course is to have students be able to follow and actively participate in current climate change policy debates. As such, students need to be familiar with the magnitude and the causes of the problem, how climate policy is developed, and reasons why, despite significant support for action, there is little progress toward meeting scientifically determined climate mitigation goals. The course seeks to leave students well versed in both domestic and international policy settings, to provide them with the ability to identify critical assumptions that can alter policy outcomes, and to bestow students with significant understanding of current climate policy. In particular, the course attempts to leave students with a firm understanding of legitimate policy disagreement. POLS 332 is divided into three parts, each with its own set of course goals and learning objectives (see also course syllabus in Appendix A1):

I: Foundations

Goal: Understand how estimates of climate impacts are translated in policy recommendations, and reflect upon how assumptions change policy-goals.

Learning objectives:

1. Explain the magnitude of the climate change problem, the most important impacts, and the leading drivers of climate change.
    a. Use systems thinking to explain the constraints imposed on social welfare by limited natural resources and social equity.
2. Critically evaluate the assumptions underlying how impacts are translated into dollar values (e.g., discount rates, sustainability definitions, scope of costs and benefits) and how they affect policy recommendations.
    a. Distinguish between weak and strong conceptions of sustainable development.
    b. Relate weak and strong sustainability to differing climate change policy proposals.
3. Explain different methods of tackling or adjusting to climate change and differentiate amongst them based on costs and benefits.
4. Understand the concept of inter-generational equity and relate it to differing proposals for distributing the international mitigation effort.

The first part – Part I: Foundations – seeks to provide students with the building blocks to discuss policy in the two subsequent parts. As such, assuming no climatology background, students are introduced to an overview of the current extent of the climate crises, the basic science, and how international climate reports are compiled. While students tend to have some understanding of the magnitude of the problem, they often display unawareness of how these effects are translated into economic impacts and, consequently, policy recommendations. This process entails a number of foundational assumptions which have profound impacts on the dollar values we place on climate change impacts and thus, subsequently, how much effort should be exerted to mitigate climate change. The lessons provided here range beyond climate policy – often (policy) analyses and public statistics are considered to be objective when there are alternative and legitimate means of constructing them. Understanding how these values are derived is critical for a more thorough understanding of public policy and politics in general.

This Part also introduces students to the concepts of sustainability and inter-generational ethics which provide the context of much of the ethical debate surrounding climate change. Finally, student receive an overview of the fundamental approaches to 'solving' climate change (mitigation, adaptation, and geo-engineering) which provides them with the building blocks to discuss policy procedures and outcomes in the subsequent parts of the class.

The Importance of Learning Objective 1.2

In climate policy the impacts of climate change on society are aggregated and used to calculate the social cost of carbon (SCC). The SCC is the dollar value of the total damages imposed on society (via, for example, reduced agricultural yields, increased flooding damage, higher number of heat related deaths, etc.) by an additional ton of CO_2. This value is used extensively to in determining the level of policy interventions; if the estimate of SCC is high, more stringent, potentially expensive, regulation can be justified as these avoid significant damages. However, there is no single way these estimates may be compiled, allowing different administrations to calculate their own diverging estimates. The previous administration estimated the SCC to be significantly higher than the current administration, which, in part, explains the previous administration's more ambitious climate policy. Understanding the idiosyncratic assumptions that are made to calculate the SCC (and other indicators critical to policy-making) is central to understanding the political nature of (regulatory) policy-making and large variations in policy outcomes. While the material covered and the learning objective is specific to climate policy, the insight about the subjective nature of assessing and calculating policy impacts and core indicators is critical to understanding policy-making in general and may be applied to numerous policy areas. As such this is perhaps one of the most important learning objectives of the course.

II: International Policy

Goal: Understand the international setting in which climate change is being tackled.

Learning objectives:

1. Identify cost and benefit distributions of different international problems and use this to predict international climate change treaty outcomes.
2. Explain international environmental treaty settings.
3. Critique Paris and Kyoto treaty effectiveness.

Part II: International Policy provides students with an overview of the international policy-making context. Students learn to identify cost and benefit distributions of different international problems and use basic game theory to predict policy outcomes – these skills are transferable to various policy problems and provide insight into barriers to negotiation and agreements. Students are introduced to the international agreements that have been negotiated with regards to climate change and learn how to assess their effectiveness.

III: *Domestic Policy*

Goal: Understand why there has been a federal-level impasse in tackling climate change.

Learning objectives:

1. Distinguish between current domestic policies and proposals and critique their effectiveness.

2. Understand the role of states and local governments in tackling climate change.
3. Explain the impact of framing and psychology on US climate policy.

Part III: Domestic Policy addresses what has been done domestically to mitigate or adapt to climate change. Students learn why public opinion is split about the issue even though there is scientific consensus. These insights (along with an understanding of the incentive structures inherent in the political system) are then used to explain widespread federal inaction even in the face of significant support for climate action. Students then learn about regulatory and state-level policy-making as alternative avenues for climate policy and begin to assess its relative effectiveness.

Course Context

The course is a standalone course that is offered every Spring semester – there are no prerequisites and it is not required for other course offerings. However, students may use it to meet i) their required number of upper-division political science courses for their political science major, ii) their required courses for a concentration in public policy for a degree in political science, or iii) their required courses in the environmental policy specialization for the Certificate in Public Policy Analysis. Although there are no prerequisites for the class, students who have taken POLS 236 Public Policy Analysis, POLS 160 Introduction to International Relations, or AECN 265 Resource and Environmental Economics I do benefit from this foundational knowledge during the course. While there is no sequence of courses in political science within which POLS 332 sits, it complements courses in the School of Natural Resources that focus on the climate science, impacts, and mitigation strategies: NRES 104 Climate in Crisis, NRES 452 Climate and Society, and NRES 467 Global Climate Change. While there is some overlap between these courses, POLS 332 emphasizes policy (and policy-making) which is not covered in great detail in the complementary climate change courses listed.

Course Student Body: Enrollment and Demographics

POLS 332 typically attracts about 20-30 students of diverse backgrounds – while the majority of students are political science majors, students have majored in such diverse fields as finance, criminology and criminal justice, film studies, environmental studies, and child, youth and family studies. In the Spring 2020 semester 32 students (22 political science majors and 10 non-majors) were enrolled in the course. Students are mostly of junior and senior standing, but also include several sophomores and the occasional freshman. In a previous semester, a Ph.D. student in natural resources also enrolled in the class, which may highlight the somewhat unique subject matter of the course.

Given the subject matter, the course attracts students of diverse political leanings and attitudes towards the environment. For example, in Spring 2020 one student self-identified as a vegan animal rights activist, while another student was a third-generation rancher. Further, many of the non-majors are actively engaged in sustainability and climate change advocacy groups and consequently are passionate about environmental ethics. Many of the political science students in contrast have a minor in national security, with corresponding greater interest in climate change as a security threat than sustainability. This diversity allows for interesting but, at times, challenging discussions.

TEACHING METHODS, COURSE MATERIALS, AND OUTSIDE ACTIVITIES

In-Class Activities: Description and Rationale

Active Learning General Class Structure

The course relies on active student participation in a range of activities, many of which are group-based. This class structure was designed to allow for active learning which has been demonstrated to result in improved learning outcomes (e.g., Knight & Wood, 2005; LoPresto & Slater, 2016; Yoder & Hochevar, 2005) even if students do not always perceive these learning benefits (Deslauriers et al., 2019). Many class sessions involved a brief lecture followed by a group discussion or group-based worksheet to demonstrate the application of presented concepts. In some cases in-class activities were conducted prior to lectures or feedback from the instructor to allow students to identify questions and problems. In my experience, allowing students to identify questions by working through the material themselves makes them more receptive to lectures and answers provided by the instructor. Some class sessions, depending on the subject matter covered, were more reliant on lecture to convey material (for example, providing students with an overview of climate science). In these cases, I designed the lectures to be highly interactive, by, for example, integrating a low-stakes (e.g., to determine who gets to sign up for presentations slots first) group-based trivia quizzes.

Examples of In-class Activities

Small-group Discussions – To allow students to critically engage with the course material I implemented a number of small-group discussions. Students were asked to self-organize into groups of 3-5 (this method of organization was preferred to me assigning groups) and discuss a list of questions that ask them to critically assess concepts or apply them to new settings. During the discussion I am relatively hands-off to avoid that students feel evaluated, so that they might potentially have deeper and more meaningful discussions – although I am available to answer questions, provide feedback, etc. Rather than have small groups summarize or share their discussions with the whole class, a strategy that has led to little meaningful discussion at the class level in the past, I move from group to group once they feel they have completed their discussion. I ask them to share their discussion on some of the questions and ask challenging follow-up questions to ensure that they have understood the concept and are able to apply it in a meaningful manner. I ensure that each group leaves with the same critical take-away lessons from the discussion. This type of interaction acts as a type of formative assessment, where students are immediately able to ascertain whether they have been learning/understanding the course material as intended. At the end of class, each group hands in a list of bullet points that summarizes their discussion. This allows me to catch any critical misunderstandings and acts as the basis for a daily in-class score. Discussion bullet points are graded generously based on effort. To encourage active participation, students assess their group members' participation. For most discussions, I ask every individual to hand in a document with their group members' names with a checkmark next to each member's name who adequately participated in the discussion. Adequate participation is defined as: i) the individual clearly having completed the reading (even if he/she didn't fully understand it), and ii) the individual having clearly tried to participate in the discussion with meaningful comments (even if these thoughts and opinions were not shared by others). These documents are used to modify in-class scores, with missing checkmarks reducing a student's in-class score. Discussion questions were designed to provide students with scaffolding to arrive at insights critically related the learning objectives listed above. Appendix A2 provides an example of discussion questions related to learning objectives 1.2 and 1.4.

In-class Worksheets and Assignments – In addition to discussions, students work through a varied selection of in-class activities intimately linked to the learning objectives set out. These assignments sharpen critical thinking and problem solving skills. I will highlight a couple of activities here. *First*, to address learning objective 1.1a, students used received hands-on time with a web-based version of the integrated assessment model by scientists and policy-makers to assess the impacts of climate change on the environment and the economy. Students were able to adjust model settings to learn how model predictions change based on assumptions used for the model. They completed a worksheet using the model to assess how sensitive our predictions are to changes in population growth and other parameters. This activity provided students with a hands-on experience of systems thinking in climate change policy. *Second*, learning objective 1.2 was addressed via a multi-part assignment and assessment. To understand some of the factors that determine climate mitigation responses, students were asked to consider the following before the next class: *The Obama administration calculated the social cost of carbon to be $50/ton. The Trump administration calculated it to be $8/ton. What might account for this difference?* Students were to bring to the next class session one paragraph of speculation in response to this question – without needing to research anything or know the true answer to the question. In class, students were placed into groups (of 3-4 students) and asked to compile a numeric estimate of the social cost of either lead contamination or individuals not completing high school. This was relatively free-form so that students identify themselves the various costs they need to consider and the various assumptions they need to make. Each group submitted its estimate to Canvas so that students were exposed to different approaches. Thereafter, a lesson follows, in which many of the actual factors (e.g., weak sustainability assumption, scope of costs and benefits, discounting, etc.) going into estimates of the social cost of carbon. This multi-step activity/lesson was designed to actively engage with the assumptions that go into "simple" damage estimates which, in turn, determine policy responses. While addressing learning objective 1.2, this lesson has implications for policy-making in general and is critical for understanding the policy context that shapes public responses.

Presentations – Finally, all students, in pairs or groups of three, were asked to present on a topic during the course of the semester. Presentations were designed to be about 10 minutes in length (each student presenting for 3-4 minutes). Audience members were required to ask at least one question (as a class) per presentation. Topics covered in the presentations was supplemental material that provides much needed insight or context for material covered in the learning objectives. Students received detailed extensive instructions for the presentations (see sample instructions in Appendix A3), including source material (to ensure students use creditable sources) and specific questions they need to answer in the presentations (to ensure that the presentation content matches intended lessons). The rationale behind the presentation assignment is threefold: i) allow students to critically engage with material that does not lend itself for lecturing or in-class activities; ii) provide students with the opportunity to conduct in-depth research on a narrow topic; iii) allow students to hone their information distillation and public speaking skills.

Formative and Summative Assessments: Description and Rationale

Exams

Students were asked to complete three exams, one for each part of the course. The first exam was in-class and comprised a mix of multiple choice and short-answer questions. The short answer questions asked students not only to define certain concepts but also explain how they relate to one another and impact climate policy. This allowed students to demonstrate in-depth understanding beyond what can be tested in a multiple choice setting. The final two exams were take-home exams as they were essay-based. The different exam structures were chosen in reflection on the corresponding course material. Part I relies on some factual and definitional knowledge, while Part II and III require more analysis of policy context to interpret policy-outcomes – understanding which is hard to assess in a multiple choice setting.

Final Papers

In lieu of a final exam, students were required to write a final paper that explores an aspect of climate change policy in depth. Students had considerable leeway in determining the topic of their paper as long as it was related to climate change policy and they were genuinely interested in the topic. I provided guidelines on compiling research questions and the paper expectations (see an excerpt of the instructions in Appendix A4). The project was to be completed in three drafts: i) paper topic, ii) first draft (i.e., a fully researched, extensive outline), and iii) the final paper. For each of the two initial documents, I met with students individually to provide feedback and address any remaining questions they had. The two initial documents were relatively low stakes and were thus used mostly for formative assessment, while the final draft acted as a summative assessment tool. The rationale for the final paper was to have students apply some of the material that they learned in class to a different setting. In addition, it allowed students to hone their critical thinking and organizational skills.

Course Materials: Description and Rationale

This relies on varied sources to explain concepts and provide examples of real-life applications. There is no appropriate textbook that covers the content of the course given the diversity of topics covered. While textbooks might be identified for each part of the course, these are not always as current as is necessary for a rapidly changing policy area as climate change. In addition, part-specific text books would cover additional content that this course does not delve into, given that only a few weeks are assigned to each part. Thus, I have compiled readings from a range of different sources which include chapters from academic books, academic journal articles, newspaper articles, pop-science articles, government reports, treaty texts, and non-profit websites.

Illustration of Changes from Previous Years

The course and its implementation strategies have evolved considerably since the first offering in Spring 2017. The assigned readings have shifted away from a textbook to more targeted offerings and current events. The order of the parts was also altered. Initially, we discussed domestic responses to climate change before international responses. This order was reversed for the current installment of the course. While this change may seem minor, the reordering of the material allowed for a more seamless integration of the material from Part I to Part III. The discussion of international policy sets the context in which domestic climate mitigation policy is formulated. In addition, the material covered in the first part (for example, discussions about

inter- and intra-generational) lends itself to contextualize the international policy setting (e.g., how should the burden of CO_2 emissions reduction be distributed?). Two additional changes were made: i) final papers were added to student assignments, and ii) discussions were made less formal. *Final papers* – in past installments of the course, students were not required to complete a final paper. Rather they focused on completing exams and compiling detailed write-ups of one discussion question posed per course part. While this allowed students to reflect on the in-class discussions and provided useful preparation for short-answer exam questions (which were significantly based on material covered in class discussions), it did not assess whether students were able to apply some of the insights learned to other settings. Final papers also allow students to delve deeper, think critically, and organize their thoughts on topics in which they have a personal interest. Thus, while papers increase the students' and the instructor's workloads significantly, they provide a unique learning experience. *Less formal discussions* – in the past, group discussions involved i) opening discussion up to the class, and ii) required out-of-class formal write-ups. This structure was eliminated for a less formal structure (see above), because i) students were reluctant to engage in a discussion with the whole class, and ii) discussion write-ups had little added assessment value over exams.

Online Transition Modifications

After rise in COVID-19 cases in the US, the University suspended in-person classes for the week before spring break. This date coincided with the final set of in-class presentations and the take-home exam for Part II of the course. Instructors were given two weeks (until classes resumed after spring break) to transfer class materials and activities online. During the transitionary period, I surveyed my students to assess the challenges they would face (e.g., less time devoted to studying, internet connectivity issues, mental health concerns, etc.). On basis of this information, a number of changes were implemented to accommodate a range of challenges students faced after returning home (these changes were communicated as a syllabus addendum in Appendix A5). In particular, the following significant changes were made.

Asynchronous classes with weekly deadlines – I set up weekly modules on the course Canvas site to provide clear expectations which work was expected to be completed when. (See screenshot of the course homepage below.) While each weekly module was expected to be completed by Sunday of a given week, students could work through the material at their own pace. As completed modules were available, students were able to work ahead if they so wished. This design was implemented to avoid any problems synchronous sessions may pose with changes in schedules and limited internet connectivity. In a given week, students were asked to i) complete the assigned readings, ii) watch/listen to brief lectures I had recorded via VidGrid and complete a short multiple choice lecture quiz (they received two attempts), and complete one or two weekly assignments[2] or work on their exam/final paper. (See an example of a weekly course site in Appendix A6.)

[2] Assignments ranged from answering discussion questions (by themselves or in groups if they had indicated preference for group work in a survey) to watching peer presentations.

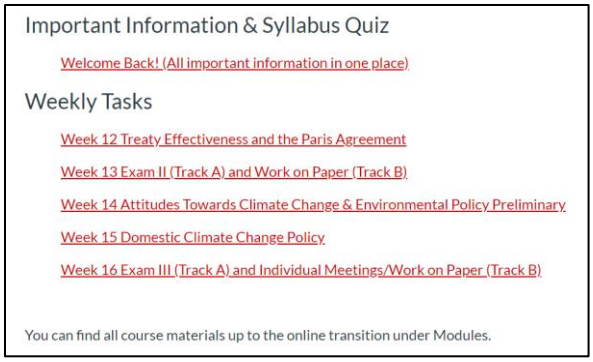

Figure 1: Screenshot from Course Homepage (illustrating organization of online material and tasks)

Two-track course completion – After students indicated a strong preference for making the final paper optional (and the consequent grading weight changes), I decided to allow students to complete either the two remaining exams or the final paper, so as to reduce pressure on students given the trying circumstances. Students were asked to commit to one of the following tracks: *Track A* students were required to complete the two remaining exams (one for the international part of the class, one for the domestic part of the class), but not the final project. Both exams were more involved/longer than originally planned and accounted for more of the final grade. *Track B* students were required to complete the final paper, but no more exams. This involved individually meeting with me twice via Zoom to receive feedback on earlier drafts/topic descriptions.

On-line presentations – A number of students were not able to give their presentations in-class as planned before the transition to online classes. These students were asked to compile short presentations (i.e., narrated slides) via VidGrid. These presentations were made available to the class. Students were then asked to watch at least three of these presentations and reflect upon them in one of their weekly assignments.

ANALYSIS OF STUDENT LEARNING

General Assessment: Student Course Evaluations

Here I provide evidence of learning based on student evaluations. Given the unusual nature of the semester (i.e., transition to online classes due to a global pandemic) and recent transition to online evaluations, it important to acknowledge that these results may only reflect the views of a subset of students. Nevertheless, student evaluations shed at least some light on how students perceived the course, assess how much they learned, and which aspects of the course were particularly helpful.

Course evaluations were completed by 15 out of 32 students (46.88% response rate). 100% of students agreed that they "*felt challenged to learn a lot in this course*." 73.33% of students *strongly* agreed. All but one student (93.33%) agreed (80% *strongly* agreed) that "*course activities effectively promote[d] [their] learning and interest in the subject.*"

3 - What has been beneficial to your learning? From the following list of teaching elements, what is the one thing that has been the most beneficial for your learning in this course so far? After your selection, please provide written comments about the element.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Inclusiveness	(1)	2	13.33%		
Course Performance Expectations	(2)	0	0.00%		
Course Challenge	(3)	2	13.33%		
Engagement in Assignments or Projects	(4)	1	6.67%		
Course Learning Materials and Tools	(5)	0	0.00%		
Active Learning Opportunities	(6)	1	6.67%		
Quality Interactions with Students	(7)	3	20.00%		
Timely and Useful Feedback for Improvement	(8)	0	0.00%		
Support	(9)	2	13.33%		
Instructor Communication	(10)	3	20.00%		
Other	(11)	1	6.67%		
Not Applicable	(0)	0	0.00%		
				0 25 50 100	

Response Rate
15/32 (46.88%)

Figure 2: Excerpt from Student Course Evaluations

While students did not agree on which element of the course they found most beneficial to their learning (see Figure 2 above), a few themes emerge in the written comments associated with this question. Students particularly valued the *discussions and peer-learning activities*, even when they were not always excited about them:

> *"Learning from the perspectives from the other classmates was a huge help."*

> *"We had many constructive discussion groups where we all got to speak our minds, but also compare critical think pieces relative to climate change policy and analysis distributed by Prof. Kreitmair. These discussion groups proved helpful for exams and group activities like handouts, worksheets, and diagrams."*

> *"Almost every class period required group work, which while some days it really wasn't ideal, it was a good way to have quality interactions with students."*

Only one student identified group discussions and group work in general as problematic:

> *"…Third, please consider cutting back on the group work. Group work is almost always an unfair situation, but it also limits the accessibility to students with things such as social anxiety which coupled with the attendance policy is a nightmare."*

In addition to group discussions, students identified *classroom activities* and presentations as helpful learning tools:

> *"The in class assignments that we took part in helped a lot with the understanding of the course. We did presentations as well which helped with class engagement, even after we had switched to online only."*

> *"The creative course projects and in class course challenges that gave me an inside view into the real experience that this course was preparing me for."*

General Assessment: Exam Scores

I am using exam scores to assess whether students met the learning objectives set out at the beginning of the course. Exam I tests students on their understanding of material covered under Objective 1 – this exam was held in case and comprised both multiple choice and short answer questions. Exams II and III tested students on their comprehension of and ability to connect materials covered by Objectives 2 and 3, respectively. Both of these exams were take-home exams that asked students to answer a multi-part essay question. This allowed students time to reflect on the material and provide more in-depth analyses. The Table below summarizes student performance on these exams.

Exam	N[3]	Mean	Range	St. Dev.
I	32	79.73%	64.38 – 95.63%	8.51
II	16	89.75%	84 – 96%	2.0
III	16	89	80 – 98%	2.94

Table 1: Summary Statistics: Exam Scores

Overall, all students passed the exams. Mean scores ranged from C+ to B+ across the different exams indicating that students demonstrated considerable grasp of the course material under each learning objective. While Exam I scores were considerably lower than scores in the remaining exams, this may not indicate less understanding of Learning Objective 1 material. Rather, the exam structure differed and students scored relatively low on the multiple choice component of Exam I (multiple choice: $\mu = 72.34\%$, short answers = 87.11%). The short answer scores were similar to the scores received in Exams II and III. This may indicate similar understanding across the different parts of the course, although further analysis of the questions is necessary to draw any firm conclusions.

[3] After the transition to online classes, students could choose whether they wanted to complete exams or complete the final paper.

Assessment of Learning Objective 1.2

Learning Objective 1.2: Critically evaluate the assumptions underlying how impacts are translated into dollar values (e.g., discount rates, sustainability definitions, scope of costs and benefits) and how they affect policy recommendations.

There are a number of ways that learning regarding Learning Objective (LO) 1.2 will be assessed. The counterfactual (i.e., the pre-lesson state of knowledge) was determined by a pre-test survey implemented in the first week of classes. To account for learning, responses were intended to be contrasted with exam responses (summative assessment of LO 1.2) and more detailed extra-credit assignments. Further to assess relative effectiveness of altered learning techniques (changes in course implementation from previous years), exam responses from Spring 2020 were to be contrasted to aggregate quality measures of exam responses from Spring 2019.[4] Unfortunately, however, with faculty and staff being asked to work from home and having limited access to campus offices, I do not have access to all the materials (paper exam copies). The current analysis is thus a truncated assessment of LO 1.2 with the resources available to me currently. I intend to update the analysis in the coming months.

Pre-test Survey

30 students completed this anonymous survey. Questions pertinent to assessing LO 1.2 included (a reminder of some of the concepts mentioned below and of the importance of LO 1.2 can be found here):

What is the social cost of carbon? Why is it important in climate policy?

20 out of 30 students left this question blank or indicated they did not know the answer. All but one out of the ten responses received showcased limited understanding of the concept – the question was answered in general terms. Examples of responses:

"The use of carbon is affecting people directly rather than just the environment"

"I think the social cost is life or death. It's important because climate policy is pertinent and should be done quicker."

"Certain locales and inhabitants will see more sever effects."

"It's cheap, so it's hard to replace/used a lot."

On what basis have the current and previous administrations compiled differing estimates of the social cost of carbon?

Only five students responded to the question. Of these, one demonstrated a general understanding of the cost-benefit analysis underlying regulatory policy-making, but was unable to indicate the different between the administrations' approaches. The remaining four responses indicated unfamiliarity with the underlying processes and the assumptions used to construct policy indicators.

[4] The questions are not identical across the two different exam installments (in part due to the Peer Review of Teaching process of critically evaluating whether assessments accurately evaluate whether learning objectives were met). However, sufficient overlap exists to make comparison of responses a worthwhile endeavor.

What is the "discount rate"? How does it affect policy recommendations?

Again, five out of 30 students answered this question. None of these responses demonstrated familiarity with the concept. Rather students answered the question on basis of common understanding of the term "discount." They suggested that less developed countries might receive discounted responsibilities in international climate mitigation efforts, or that policy was "discounted" to the point of being too weak to effectively mitigate climate change. None of the students connected it to the calculation of the social cost of carbon.

Exam 2020 Results and Extra-Credit Assignment

Exam I posed the following short-answer question directly related to LO 1.2:

> *Is the Trump administration or the Obama administration estimate of the social cost of carbon higher? Aside from political motivations, what accounts for this difference?*

The mean score was 8.65/10 (sd = 0.87) indicating solid understanding of much of the concepts covered under LO 1.2. However, given the time and space limitations, exam responses provide imperfect insight into student understanding. Thus, after exam I, students received the opportunity to receive extra-credit (up to 4 extra points on the exam score) by re-answering this (and an alternative) question. This assignment allowed students more time and space to reflect and showcase their understanding directly related to LO1.2.

I received 11 extra-credit responses answering the question posted above. The quality of the submissions was very high. Even with rigorous grading[5], the mean score was 3.09/4 (sd = 0.70). on average, responses clearly defined the social cost of carbon and indicated different estimates by the different administrations. Excellent submissions explicitly stated at least two differences in assumptions across the administrations' estimates (see submissions B1 and B2 in Appendix B). Further, these students reflected on the larger implications changes in assumptions to calculate the SCC and subjectivity in policy-making in general. By contrast, weaker submissions still clearly defined the SCC and discussed varying assumptions, but did not do so in great detail or only covered a smaller set of assumptions (see submission B3 as an example). These submissions still showcased understanding of the concepts and the applications. All student submissions are in stark contrast with the responses received in the pretest. This analysis provides evidence that LO 1.2 was met, by at least the students submitting extra-credit assignments and this was a result of the learning that occurred on account of class activities and materials.

[5] An essay of passing quality received 2 points, an above-average quality essay received 3 points, and an excellent essay received 4 points.

REFLECTION ON THE COURSE

Successes, Shortcomings and Potential Changes

Working through the portfolio process and participating in the Peer Review of Teaching process has pushed me to critically evaluate this course and how it might be improved.

Overall, the course has been effective and well-received by students. In fact, 7 out of 14 student evaluation respondents indicated that they had no suggestions for improvement. Given this, I do not foresee major revisions to the course. However, following the analysis in this portfolio, there are a number of smaller improvements:

Revisiting Learning Objectives and Assignments – While the current learning objectives have worked well in motivating class activities, further refinement and streamlining would allow me to delve deeper in the subject material and not overburden students. In addition, as I move forward with this course, I seek to connect each class activity, assignment, and assessment more directly with each learning objective. While I currently have clear general links, carefully defining exactly how each assignment relates to each learning objective will likely further improve learning outcomes.

Group-based Class Structure – The group-based class structure has been effective with many students commenting on the benefits of being able to engage with and learn from each other. However, one student critiqued the reliance on group work, highlighting the opportunity for free-riding and the lack of consideration of socially anxious students. To overcome free-riding incentives I have incorporated peer assessments of participation and I have tried to keep groups very small to create safe environments for socially anxious students. That said, while I strongly believe that students need to learn how to effectively work in teams, I will consider adjusting the group structure somewhat. I may offer alternative assignments or projects, reduce group sizes further, and potentially allow for permanent groups to improve how comfortable students to openly exchange ideas.

Mid Semester Evaluations – I believe it is important that students are heard and have sway in their courses. To allow students to voice their opinions and suggest improvements mid-semester, I will implement mid-semester student evaluations (e.g., start, stop, keep). This would notify me of any issues students are running into in the course while I still have the opportunity to make changes. Even if I cannot make the requested changes, it allows me to address student concerns about given course design features. I am also hopeful that these types of interventions give students more "ownership" of the course and will thus hopefully improve student engagement.

Lessons from Peer Review of Teaching and the Portfolio Process

Participating in the Peer Review of Teaching (PRT) program has been a valuable experience. While there were numerous benefits from participation, I will focus on three in particular; i) more intentional course design, ii) a community of dedicated educators, and iii) documentation of teaching effectiveness.

Intentional Course Design – Working through the PRT process has demonstrated the value of backward design and careful matching of class activities and assessments to learning objectives. Reflecting on my previous installments of this course (and other courses), I now recognize that I

often did not fully specify learning objectives. Rather, course design often involved a list of topics that I felt that should be covered without careful consideration on why. In turn, this resulted in ad hoc class activity design and frustration when students did not seem understand the material that I *implicitly* thought they should. Engaging in backward design of the course, resulted in more intentional design of activities and subsequently better understanding on part of the students. Since working through the backward design process in PRT, I have applied these insights to other of my courses as well. I expect to keep on using this process and subsequently improving my teaching.

Community of Dedicated Educators – Participating in the PRT brought me in touch with dedicated educators who care deeply about their teaching and their students. It is invaluable to have a community to turn to when teaching questions or concerns arise. In particular, the PRT community has been very supportive and understanding of any teaching related issues that might arise. This type of support was especially valuable following the pandemic-related transition to online classes. This transition was challenging, but the challenge was lessened by being able to talk through some concerns with PRT groups.

Documentation of Teaching Effectiveness – While many faculty have received teaching training of varying degrees, documentation of teaching effectiveness does not usually receive coverage. Even though our jobs have considerable teaching components, we often rely on student evaluations only to demonstrate our instructional competencies. The PRT process has allowed me to reflect critically on how I can measure my teaching success and document it. While I am only beginning to document these successes, and still have a lot to learn, this has been invaluable.

REFERENCES

Deslauriers, L., McCarty, L. S., Miller, K., Callaghan, K., & Kestin, G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. *Proceedings of the National Academy of Science*, *116*, 19251–19257.

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LoPresto, M. C., & Slater, T. F. (2016). A new comparison of active learning strategies to traditional lectures for teaching college astronomy. *Journal of Astronomy & Earth Sciences Education (JAESE)*, *3*(1), 59–76.

Yoder, J. D., & Hochevar, C. M. (2005). Encouraging active learning can improve students' performance on examinations. *Teaching of Psychology*, *32*(2), 91–95.

APPENDICES

Appendix A1: Course Syllabi and Assignments

POLS 332: CLIMATE CHANGE: POLICY AND POLITICS

Spring 2020

Meets: Tues & Thurs 2:00-3:15pm in 107 Burnett Hall

Instructor:	Dr. Ursula Kreitmair	**Email:**	ukreitmair2@unl.edu
		Office Phone:	402.472.2064
Office:	503 Oldfather Hall	**Office Hours:**	Wed 1:30-3pm or by appointment

Course Description and Goals

The main goal of the course is to help you follow and actively participate in current climate change policy debates. As such, you need to be familiar with the magnitude and the causes of the problem, how climate policy is developed, and reasons why, despite significant support for action, there is little progress toward meeting scientifically determined climate mitigation goals. The course seeks to leave you well versed in both domestic and international policy settings, to provide you with the ability to identify critical assumptions that can alter policy outcomes, and to bestow you with significant understanding of current climate policy. In particular, the course attempts to leave you with a firm understanding of legitimate policy disagreement. To achieve these goals, you will engage in numerous discussions, simulation exercises, and case studies. POLS 332 is divided into three parts, each with its own set of objectives. By the end of the course you will be able to:

Part I: Foundations

Goal: Understand how estimates of climate impacts are translated in policy recommendations, and reflect upon how assumptions change policy-goals.

Learning objectives:

1. Explain the magnitude of the climate change problem, the most important impacts, and the leading drivers of climate change.
    a. Use systems thinking to explain the constraints imposed on social welfare by limited natural resources and social equity.
2. Critically evaluate the assumptions underlying how impacts are translated into dollar values (e.g., discount rates, sustainability definitions, scope of costs and benefits) and how they affect policy recommendations.
    a. Distinguish between weak and strong conceptions of sustainable development.
    b. Relate weak and strong sustainability to differing climate change policy proposals.
3. Explain different methods of tackling or adjusting to climate change and differentiate amongst them based on costs and benefits.
4. Understand the concept of inter-generational equity and relate it to differing proposals for distributing the international mitigation effort.

Part 2: International Policy

Goal: Understand the international setting in which climate change is being tackled.

Learning objectives:

4. Identify cost and benefit distributions of different international problems and use this to predict international climate change treaty outcomes.
5. Explain international environmental treaty settings.
6. Critique Paris and Kyoto treaty effectiveness.

Part 3: Domestic Policy

Goal: Understand why there has been a federal-level impasse in tackling climate change.

Learning objectives:

4. Distinguish between current domestic policies and proposals and critique their effectiveness.
5. Understand the role of states and local governments in tackling climate change.
6. Explain the impact of framing and psychology on US climate policy.

Assigned Resource
There is no required textbook. Any assigned readings are accessible via a link on the course schedule (see below) or have been uploaded to Canvas.

Expectations
Course Structure, Attendance, and Participation
While there will be a number of lectures, the course will predominantly require student involvement (via student-led discussions, simulations, and other activities). This type of class structure allows for active learning which has been demonstrated to result in improved learning outcomes (e.g., LoPresto and Slater 2016; Knight and Wood 2005; Yoder and Hochevar 2005), even if it does not always feel that way (Deslauriers et al 2019). Given this structure, it is imperative that you come to class having completed the assigned readings, have thought about the material and are ready to discuss it/ask questions.

I expect you to attend and pay attention in every class. You will have to be present and attentive to do well on your exams. Please ask questions whenever you do not understand something or if I am not being clear. *Really, there is no such thing as a stupid question if it helps you learn*.

Communication
You are responsible for being able to access all the relevant material from the site and for keeping up to date with information on this class. This means that you will need to monitor your emails and the POLS 332 Canvas site. If you have not already done so, I recommend receiving school email notifications on your phone.

If you need to get in touch with me, please do so via email or meet me in person during my office hours. If you have a scheduling conflict with my office hours, email me to arrange an alternate meeting time. In addition, you can often reach me on my office phone during regular work hours.

Assignments and Preliminary Due Dates
There will not be a final exam for this class. Rather, your grade will be determined through your performance on 1) in-class participation and brief homework assignments; 2) a presentation; 3) three exams; and 4) a final paper:

1. **In-class Score: Attendance, Discussion Participation, Quizzes and Short Assignments (30% of final grade)**
    - I will take attendance every day. On days when there is no other assignment, I will give points for attendance.
    - We will have a number of short quizzes and in-class assignments during the course of the class. Although there will be some variation, on average, you can expect there to be a reading quiz or in-class assignment once a week. In addition, there may be brief homework assignments.
    - We will have a number of student-led discussions – active participation in them will factor into your in-class score.
    - Each quiz/assignment will be out of 10 points unless otherwise specified.

2. **Presentation (10% of final grade)**
    - **Weeks 3, 5 and 10 of class**
    - Every student (working in pairs or in a group of three) will present on a topic in the following areas:
        - Consequences of climate change
        - Emission sources
        - Methods of tackling climate change
        - Comparative climate policy
    - On Tuesday of week 2, you will have the opportunity to sign up for a presentation slot.
    - Each presentation should be about 10 minutes and all group members are required to present. Some manner of visual aid (e.g., slides) is expected. I will provide reading material to start you off.
    - **You are required to send me your slides after your presentation.**

3. **Three Exams (30% of final grade – 10% each)**
    - There will be three exams – one for each part of the class.
    - Exams will consist of a mix of multiple choice questions and short answer questions. The exact ratio will depend on the format of the exam (i.e., more multiple choice in the in-class exam.)
    - **Tentative exam dates and format:**
        - **Part I – IN CLASS – Tuesday of week 7 (02/25)**
        - **Part II – TAKE HOME - Thursday of week 10 (03/19)**

- **Part III – TAKE HOME - Thursday of week 16 (04/30)**
- **Note: The above dates are tentative.** They will depend on how we progress through the material. You will, however, receive ample notice in order to ensure that you are fully prepared for the upcoming exam.
- *For the in-class exam*
  - You will have one class period to complete the exam. I have scheduled a review session the class period before the exam.
  - The review session is optional. The class period is unstructured – you have the opportunity to ask about any of the material we covered to make sure you are prepared for the exam.
  - You may not use any notes during the exam.
- *For the take-home exam*
  - I will upload the exam to Canvas. You must submit the completed exam to Canvas.
  - I will be in the classroom during exam days in case you have any questions.

4. Final Paper (30% of final grade)

- You are required to produce a final paper that explores an aspect of climate change policy in depth. While the topic of the paper will be up to you, you are expected to draw upon the material that we covered in class.
- You will receive further instructions as the semester progresses, but here are some guidelines:
  - Paper format:
    - As a guideline, I expect your paper to be about 5 *single-spaced* pages (11-12 font).
  - Paper schedule:
    - There will be a number of deadlines for sub-parts of the paper. This is to provide you with feedback and to ensure that you do not leave yourself too much work toward the end of the semester. In particular, you will be asked to submit the following:
      - Paper topic (3% of final grade) **due Sunday of week 4 (02/09) 11:59pm via Canvas**
      - First draft. (7% of final grade) **due Sunday of week 9 (03/15) 11:59pm via Canvas**
    - Final draft (20% of final grade):
      - The completed paper is due: **Thursday of week 17 (05/7) 11:59pm via Canvas**
- I have scheduled class time during week 12 for individual meetings to discuss your first draft in person.
  - These meetings are required. Attendance will count toward your in-class grade.
  - You will have the opportunity to sign up for meeting slots in advance.

Missed Class Policy

I expect you to be in class every day. When you are absent, you will receive a 0 for the corresponding in-class assignment, or attendance. However, I understand that there are times when you are unable to come to class (contagious illness, family emergencies, extra-curricular activities etc.) – as an adult you must decide when it is best for you not to come to class. Therefore:

- Every student is allowed *two unexcused absences*. I will drop the corresponding 0-scores.
  - *This policy does not apply to exam days. If you miss an exam without having received my explicit permission to miss it, you will be unable to make it up. You will receive a 0 for that part of your grade.*
- Any additional absences must be cleared with me ahead of the class period to be missed; otherwise you will receive a 0 for that day. Documentation may be required. You will be able to have two additional absences dropped if *i*) the justification is appropriate, and *ii*) you complete a one-page essay of passing quality.

Late work

Once due dates have been set, they are firm. Late work, without penalties, will only be accepted under extraordinary circumstances, with my *prior* approval. Otherwise, I will deduct 5 percentage points from the score each day that it is overdue. For example, a draft is due Wednesday by 9am. You would have received 83 out of 100 on an assignment, but you handed it in by 9am on Thursday, so you will receive 78 out of 100, and so on.

Grades

I will not grade assignments on a curve. Your grade will be determined using a standard grading scale:

97-100 = A+	87-89 = B+	77-79 = C+	67-69 = D+	
93-96 = A	83-86 = B	73-76 = C	63-66 = D	0-59 = F
90-92 = A-	80-82 = B-	70-72 = C-	60-62 = D-	

Note: I will round up final grades to the nearest whole number. Therefore, a final score of 89.50 will earn you a final grade of A- but a score of 89.49 will not. Although this can be very frustrating if one happens to receive a grade just below the cut off, I must draw the line somewhere.

If, for whatever reason, you are required to maintain a certain grade-level and it seems that you are unlikely to receive the necessary grade in my class come speak with me immediately. *I will not bump up your grade, under any circumstances*, but I will be able to give feedback on written work and suggestions on how to improve your class performance. With hard work, if it is still early enough in the semester, you may be able to improve your grade to the necessary extent. Do not wait until receiving your final grade at the end of the semester. *These grades are final*.

Other Important Information

Services for Students with Disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office, make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD contact information: 232 Canfield Admin. Bldg.; 402-472-3787.

Academic Honesty

Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all members of the academic community. The University's Student Code of Conduct addresses academic dishonesty. Students who commit acts of academic dishonesty are subject to disciplinary action and are granted due process and the right to appeal any decision.

Writing Center

The Writing Center, located in 102 Andrews Hall and satellite locations from 5-7 pm in Adele Hall, is a free service for all UNL students, faculty, and staff. You can work with an individual writing consultant on any type of writing at any stage in your writing process. For an appointment, call 472-8803 or schedule online.

Counseling and Psychological Services

UNL offers a variety of options to students to aid them in dealing with stress and adversity. Counseling and Psychological & Services (CAPS); is a multidisciplinary team of psychologists and counselors that works collaboratively with Nebraska students to help them explore their feelings and thoughts and learn helpful ways to improve their mental, psychological and emotional well-being when issues arise. CAPS can be reached by calling 402-472-7450. Big Red Resilience & Well-Being (BRRWB) provides one-on-one well-being coaching to any student who wants to enhance their well-being. Trained well-being coaches help students create and be grateful for positive experiences, practice resilience and self-compassion, and find support as they need it. BRRWB can be reached by calling 402-472-8770.

Video or Audiotaping Class Sessions

Due to the sensitive and controversial nature of some of the topics that will be discussed over the duration of the semester, all classes are closed to the Press/Media. No video or audio taping of class sessions is allowed unless you obtain my permission to do so.

COURSE SCHEDULE & READING LIST

Important:

- The following course schedule is tentative. Depending on how we progress through the material, I may have to make adjustments. You will receive ample notice of any changes.
- I have scheduled a number of individual meeting days. While we do not have regular class on these days, you are expected to use the scheduled class time to work on your papers. Similar expectations apply when there is no class due to instructor travel.

WEEK	TUES	THURS
1 (Mon, 01/13)	Syllabus	Survey & syllabus quiz Introductions
2 (Mon, 01/20)	**PART I - FOUNDATIONS** Climate change – where do we stand?	Valuing the environment
3 (Mon, 01/27)	*Presentations: How will climate change impact us?*	*Presentations: Where do all the emissions come from?*
4 (Mon, 02/03)	Translating impacts into policy recommendations	Translating impacts into policy recommendations
5 (Mon, 02/10)	*Presentations: How do we tackle climate change?*	Carbon Pricing
6 (Mon, 02/17)	Who should cut emissions?	*Review Session*
7 (Mon, 02/24)	*In-Class Exam*	**PART II – INTERNATIONAL POLICY** International law and problems
8 (Mon, 03/02)	International problems and treaties	Treaty effectiveness
9 (Mon, 03/09)	Paris Agreement	*Presentations: What are other countries doing?*
10 (Mon, 03/16)	Slack	*Review Session & Take-home Exam*
11 (Mon, 03/23)	**SPRING BREAK**	
12 (Mon, 03/30)	Individual Meetings	Individual Meetings
13 (Mon, 04/06)	**PART III – DOMESTIC POLICY** Framing and perception of climate change	**NO CLASS**
14 (Mon, 04/13)	Federal policy preliminaries	**NO CLASS**
15 (Mon, 04/20)	Federal policy	Federal policy
16 (Mon, 04/27)	State and local policy	*Review Session & Take-home Exam*
17 (Mon, 05/04)	**NO FINAL EXAM**	

READING LIST

Important:

- Unless otherwise specified, read the assigned resource in its entirety before class.
- The following reading list is tentative. The subject area advances rapidly and I may have to adjust reading load and content as we progress through the semester. You will receive ample notice of any changes.
- The reading load is not evenly spread out – make sure to stay on top of the reading schedule so that you leave yourself sufficient time to complete the readings.

PART I

Week 2

Tuesday

- IPCC, 2018: Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.
    - **Skim p.4-17**
- Carbon Brief (2019, Nov 26) UNEP: 1.5C climate target 'slipping out of reach': https://www.carbonbrief.org/unep-1-5c-climate-target-slipping-out-of-reach?utm_content=buffer6ba42&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

Thursday

- Palmer, C., K. McShane, and R. Sandler. (2014). "Environmental Ethics." *Annual Review of Environment and Resources*. 39:419–42

Week 3 – NO READING (except presenting groups – see separate instructions)

Week 4

Tuesday

- Oreskes, N., (2004). The scientific consensus on climate change. *Science*, *306*(5702), pp.1686.
- Climate Brief (2017, Feb 14) The Social Cost of Carbon: https://www.carbonbrief.org/qa-social-cost-carbon

Week 5

Tuesday

- Pelenc, J. & J. Ballet. (2015). "Weak Sustainability versus Strong Sustainability." Brief prepared for *Global Sustainable Development Report 2015*
- Wagner, G. & M. L. Weitzman. (2015, Mar 02) „Will Camels Roam Canada Again? What we know about climate change is bad enough. What we don't could make it even worse" *The Atlantic*

Thursday

- Copenhagen Consensus Center. (2009). Copenhagen Consensus on Climate: Results
- Collins, G. (2016) "Geoengineering's Moral Hazard Problem" Slate Jan 15 2016
- Keith, D. (2016). "Why We Should Research Solar Geoengineering Now" Slate Jan 19 2016

Week 6

Tuesday

- Dews, F. (2016, May 4). 10 things you should know about the carbon tax. *Brookings Now.*

Thursday

- Argyriou, M. (2017, September 21) "Developing Countries Can Prosper Without Increasing Emissions" The Conversation
- Singer, P. & T. Fei. (2013). "Fairness and Climate Change." Project Syndicate.
- Lamb, E. (2012, November 12). Ask Gini: How to Measure Inequality. *Scientific American*

Week 7 – NO READING

PART II

Week 8

Tuesday

- Peel, J. "International Law and the Protection of the Global Environment" in Axelrod, R.S. and VanDeveer, S.D. eds., 2014. *The Global Environment: Institutions, Law, and Policy: Institutions, Law, and Policy*. CQ Press.
- Barrett, S., 2010. Why cooperate?: the incentive to supply global public goods. *OUP Catalogue*. **Excerpt**

Week 9
Tuesday

- UNFCCC
  - Essential background: http://unfccc.int/essential_background/items/6031.php
  - COP: http://unfccc.int/bodies/body/6383.php
- Faure, Michael G. and Lefevere, Jurgen, "Compliance with Global Environmental Policy" in Axelrod, R.S. and VanDeveer, S.D. eds., 2014. *The Global Environment: Institutions, Law, and Policy: Institutions, Law, and Policy*. CQ Press. **Excerpt**
- Downs, G. W., Rocke, D. M. and Barsoom, P. N. (1996). Is the Good News about Compliance Good News about Cooperation? *International Organization.* 50(3) pp. 379-406
- Ringquist, E.J. and Kostadinova, T., 2005. Assessing the effectiveness of international environmental agreements: the case of the 1985 Helsinki Protocol. *American Journal of Political Science*, *49*(1), pp.86-102. **Excerpt**

Thursday

- UNFCCC (skim)
  - Overview: http://unfccc.int/kyoto_protocol/items/2830.php
  - Protocol text: http://unfccc.int/resource/docs/convkp/kpeng.pdf
  - Paris Agreement overview: http://unfccc.int/paris_agreement/items/9485.php
  - Paris Agreement text: http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf (**Skim**)
- Jacoby, H.D. & J. Morris. (2018, December 04) "Why the Next Two Years are Critical for the Paris Climate Deal's Survival" The Conversation.
- Stern, T. (October 2018) "The Paris Agreement and Its Future." Brookings
- Wirth, D. (2016). "Is the Paris Agreement on Climate Change a Legitimate Exercise of the Executive Agreement Power?" *Lawfare*.

Week 10 – NO READING

Week 11 – *SPRING BREAK*

Week 12 – *Individual Meetings* **–** NO READING

PART III

Week 13
Tuesday

- Feinberg, M. and Willer, R. (2013). The Moral Roots of Environmental Attitudes. *Psychological Science* 24(1) 56-62
- Van der Linden, S., Maibach, E., & Leiserowitz, A. (2015). Improving public engagement with climate change: Five "best practice" insights from psychological science. *Perspectives on Psychological Science*, *10*(6), 758-763.

Week 14
Tuesday

- Lizza, R. 2010. "As the World Burns." *The New Yorker*, October 11.

Week 15
Tuesday

- NRDC (2017) What is the Clean Power Plan?
- Friedman, L. & B. Plumer (2018, July 05) "E.P.A. Drafts Rule on Coal Plants to Replace Clean Power Plan" *The New York Times*
- Lavelle, M. & J. H. Cushman Jr. (2018, April 02) "Why Weakening Fuel Efficiency Standards Could Be Trump's Most Climate-Damaging Move Yet" *Inside Climate News*

Thursday

- Chan et al (2017) "Six principles for energy innovation" *Nature*
- Erickson, P., Down, A., Lazarus, M., & Koplow, D. (2017). Effect of subsidies to fossil fuel companies on United States crude oil production. *Nature Energy*, *2*(11), 891.
- New York Times "The Daily" Podcast https://www.nytimes.com/2019/03/07/podcasts/the-daily/green-new-deal-democrats.html
  - "Promise and Peril of the Green New Deal" March 7, 2019

Week 16
Tuesday

- Meyer, R. (2018, Sep 13). 17 Bipartisan Governors Vow to Fight Climate Change – And President Trump. *The Atlantic*
- State-level climate policy tracker: https://climatenexus.org/policymap/

Appendix A2: Example of Discussion Question Assignment

POLS 332: CLIMATE CHANGE: POLICY AND POLITICS
Valuing the Environment
Discussion

Instructions

- Get into groups of about 4. Discuss all questions.
- At the end of class:
    - *Every group* hands bullet points highlighting the main points you would want to make when answering each question. You will receive an in-class grade for this submission.
    - *Every individual* hands in a document comprising the following:
        - Their own name, underlined.
        - Their group members' names with a checkmark next to each member's name who adequately participated in the discussion.
            - Adequate participation:
                - Individual clearly completed the reading (even if he/she didn't fully understand it)
                - Individual clearly tried to participate in the discussion with meaningful comments (even if these thoughts and opinions were not shared by others)
        - I will use these documents to modify your in-class score for that day:
            - For every missing checkmark next to your name I will deduct one point (I will be mindful of differing group sizes).
            - If you don't hand in the document, you only receive half credit for the group submission.

Questions

1. *Assigning value*
    a. What is intrinsic value? How does it relate to ecocentrism, anthropocentrism, animal liberationism.
    b. Why does determining what has intrinsic value matter?
    c. How might adherence to ecocentrism over anthropocentrism change our discussion of the need for (and the extent of) policy to combat climate change?
    d. Based on your readings, do unborn future generations have intrinsic value? Does it matter regarding climate change?
    e. In what way do these theories not provide sufficient guidance for policy-making?

2. *Doing the right thing*

Aside from determining what has value, we need to figure out how they translate into actions:

a. What is utilitarianism (consequentialism)? Come up with an example where you think utilitarianism would result in a morally reprehensible action. (In other words, try to find a situation where utilitarianism fails as a moral theory.) Based on this, what are some of the fundamental assumptions made by utilitarianism?
b. What is a deontological approach to ethics? Come up with an example where you think the deontological approach would fail.
c. What might the two different approaches (consequentialism and deontology) mean for how we should approach climate change?
d. Consider a consequentialist approach to climate change. How much relative weight should we give impacts to others across the world and/or the natural environment?

Appendix A3: Presentation Instructions

POLS 332: CLIMATE CHANGE: POLICY AND POLITICS

Presentations

Every student must present on one of the following topics:

Week 3 – Tuesday, 01/28 How will climate change impact us?	**Week 3 – Thursday, 01/30 Where do all the emissions come from?**	**Week 5 – Tuesday, 02/11 How do we tackle climate change?**	**Week 9 – Thursday, 03/12 What are other countries doing?**
1A: How does climate change impact our natural environment?	**2A**: What emissions?	**3A**: Mitigation	**4A**: EU
1B: How does climate change impact our economy?	**2B**: International comparison	**3B**: Adaptation	**4B**: China
1C: How does climate change impact national security?	**2C**: US emission sources	**3C**: Geo-engineering	**4C**: India

Expectations

- The presentations should be about 10 minutes long.
- Each individual is required to present a part of the presentation.
    - You have the option of working on the presentation together or divvying it up and each working on their part separately – however all slides must be aggregated into one coherent presentation.
    - While you must present, the group can choose to do so from their desk or at the front of the classroom.
- Please prepare a visual aid of some kind. Keeping in mind the time limit, expect to need about 3-6 slides (if using ppt).
- After the presentation, you must email me your slides.
- Please use credible sources for your information. I will provide resources to start you off. However, to do well, you will have to conduct additional research on your topic.

Grading

Presenters

- I will grade the presentation out of 20 points – with each individual receiving his or her own score.
- Points will be awarded for:
    - Thoughtfulness
    - Rigor (within the time constraint)
    - Organization
    - Coherence
    - Preparedness

Audience

- You will receive points toward your in-class score.
- If there is at least one thoughtful question per presentation, all attendees will receive 10/10. Otherwise, attendees will receive 5/10.

Additional pointers

Here are *some* of the questions that I expect the following presentations to answer (this is not exhaustive, answer additional relevant and compelling questions of your choosing):

1. **Climate change consequences**
    a. Impacts to our natural environment
        i. What are the general impacts of climate change on various ecosystems?
        ii. How are these impacts distributed?
        iii. What kinds of losses in biodiversity are we to expect?
        iv. Why should we care about these losses?

    b. Impacts to our economy
        i. What are the estimates regarding how much climate change will reduce economic growth?
        ii. Why will climate change reduce growth? Include:
            1. Impacts on human health
            2. Damage to infrastructure
            3. Costs to agriculture

c. Impacts regarding national security
    i. What costs does climate change pose to military installations?
    ii. What type of conflicts is climate change expected to trigger?
    iii. How will climate change impact migration patterns?

2. Emission sources

a. What emissions?
    i. What are the main different greenhouse gases? How do they differ?
    ii. Non-carbon dioxide gases: What are they sources? What is their trajectory?
    iii. What is the difference of calculating emissions on a territorial, consumption, or transfer basis?
        1. Make sure you understand the difference between these different calculation methods.

b. International comparison
    i. What is the current trend of global emissions?
    ii. Which countries account for what percentage of these emissions? (*Historically and currently*)
    iii. What are international emissions per capita and per unit of GDP (as available)?
        1. What do those different statistics tell us?

c. US emission sources
    i. What is the US emissions trend? Why have emissions followed this path?
    ii. Which sectors account for how much of the estimated emissions?
        1. Make sure to distinguish between different types of greenhouse gases (and be familiar with the term: CO2e)
        2. Within each sector, you should be able to explain, broadly, where the emissions come from.

3. **How do we tackle climate change?**

a. Mitigation
    i. What are the main strategies that are being proposed (aside from carbon pricing)?
    ii. How effective are they?

b. Adaptation
    i. What are the main strategies that are being proposed?
    ii. How cost-effective are they?

c. Geo-engineering
    i. What is it? What is the difference between carbon sequestration and solar radiation management?
    ii. What are the main strategies that are being proposed?

4. Comparative climate policies

a. EU
    i. How much variance is there in emissions across different EU countries? What accounts for some of that variation?
    ii. What is the EU ETS? How effective has it been?
    iii. What stand out renewable energy or energy efficiency policies do EU member states have?

b. China
    i. China has just announced a cap and trade scheme. How effective has it been?
    ii. How does the Chinese political structure help or hinder climate policy?
    iii. Regarding renewable energy production and installation, how does China compare to the US? Provide some policy context.

c. India
    i. Why is India particularly important when discussing climate change?
    ii. India has made significant strides in installing renewable energy sources. Provide some policy context.

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Presentation Resources – What are other countries doing?

Questions to Answer:

1. EU
    i. What are the general climate goals of the EU? Why are they setting these together and not as individual countries?
    ii. How much variance is there in emissions across different EU countries? What accounts for some of that variation?
    iii. What is the EU ETS? How effective has it been?
    iv. What stand out renewable energy or energy efficiency policies do EU member states have?

2. China
    i. China has recently announced a cap and trade scheme. How effective has it been?
    ii. How does the Chinese political structure help or hinder climate policy?
    iii. Regarding renewable energy production and installation, how does China compare to the US? Provide some policy context
    iv. What is the Chinese "attitude" towards climate change and greenhouse gas mitigation?

3. India
    i. What policies has India put forward?
    ii. Why is India particularly important when discussing climate change?
    iii. India has made significant strides in installing renewable energy sources. Provide some policy context.

4. Australia
    i. What policies has Australia put forward? Is this generally perceived to be sufficient?
    ii. Why is Australia an important case study for climate change?

Sources to start you off:

Please use credible sources for your information. To start you off, here are some sources for the week 10 presentations:

- For all presentations
    - https://climateactiontracker.org/
        - Look at the corresponding country pages and search for country specific publications
    - https://newclimate.org/wp-content/uploads/2019/12/CCPI-2020-Results_Web_Version.pdf
- EU (4A)
    - European Commission Climate Action page: https://ec.europa.eu/clima/citizens/eu_en
- China (4B)
    - Center on Global Energy Policy – Guide to Chinese Climate Policy 2018 (this is long – be selective): https://energypolicy.columbia.edu/sites/default/files/pictures/Guide%20to%20Chinese%20Climate%20Policy%207-27-18.pdf
    - Policy Brief (Kennedy School) "Comparative Assessment of China and US Policies to Meet Climate Change Targets": https://www.belfercenter.org/publication/comparative-assessment-china-and-us-policies-meet-climate-change-targets
- India (4C)
    - Climate Nexus: India and Climate Policy https://climatenexus.org/climate-news-archive/india-and-climate-policy/
    - IEEFA India: New National Electricity Plan http://ieefa.org/ieefa-india-new-national-electricity-plan-reinforces-intent-toward-275-gigawatts-of-renewables-generated-electricity-by-2027/
    - The Guardian: "How India's battle with climate change could determine all of our fates" https://www.theguardian.com/environment/2017/nov/06/how-indias-battle-with-climate-change-could-determine-all-of-our-fates
- Australia (4D)
    - https://www.bbc.com/news/world-australia-50869565

Appendix A4: Final Paper Instructions

POLS 332: CLIMATE CHANGE: POLICY AND POLITICS
FINAL PAPER INSTRUCTION PACK

In lieu of a final cumulative exam, you are asked to write a paper that explores an aspect of climate change policy in depth. While the topic of the paper will be up to you, you are expected to draw upon the material that we covered in class. The following bullet points provide content and format guidelines, as well as deadlines and other important information.

LOGISTICS

Due Dates:

- Rough drafts:
    - Paper topic (one paragraph). (3% of final grade)
    - First draft. (7% of final grade)
        - **due Sunday of week 14 (04/19) 11:59pm via Canvas**
- Final draft (20% of final grade)
    - **Due: Thursday of week 17 (05/7) 11:59pm via Canvas**

Meetings:

- You are required to meet with me individually to discuss your draft, progress and any questions you might have. Attendance at this meeting will count toward your in-class score.
- You must sign up for a 10 minute slot via Google Docs links that I will send out as the semester progresses.
- I have tentatively scheduled **week 13 and week 16**, to discuss your topics and drafts.

PAPER TOPIC

The specific topic is up to you; however, you must meet the following requirements:

- Connection to climate change (policy)
    - You do not have to write about the intricacies of federal climate policy. A lot of research is relevant to policy. Just don't focus entirely on climate science.
- Make it something that interests you.
    - If your interests lie with national security, health policy, athletics, you name it – focus on that. Just link it up with climate change.
    - If you are researching a topic for work or another class, feel free to write on that subject. Just make sure not to submit the same work.
    -
- **Research question**
    - You must identify a **research question** for your paper. The *ultimate goal* of the paper is to answer the question you pose.
        - *Without an explicit research question, the paper topic draft will receive 0 points.*
    - What makes a good research question?
        - It is actually a question
            - **Bad:** The relationship between cost benefit assumptions and the social cost of carbon
            - **Good:** How do the assumptions underlying cost benefit analysis impact the social cost of carbon calculation?

        - It is specific and within the scope of feasible projects
            - **Bad:** Why is climate change bad?
            - **Good:** To what extent are UNL students aware of the effects climate change will have on them, Nebraskans and the US in general?
            - **Good:** To what extent will existing agricultural policy be able to lessen the impact of climate change on Nebraskan crop producers?
            - **Good:** How resilient is US immigration policy to expected migration changes in the face of exacerbating climate impacts?

To be handed in:

- ~ one page covering the following:
    - Research question (state this explicitly)
    - Brief description of the topic
        - Provide context for the research question – why is this an important question?
        - As appropriate define terms used in the research question.
        - As appropriate limit the scope of the analysis (e.g., confine analysis to one country, one time period, etc.)
    - Brief explanation of why you care

FIRST DRAFT:

To be handed in:

The first draft comprises an *extensively* researched *outline* of the final paper. This means that rather than summarizing what you will include in each section, it requires you to include, as far as possible, the *actual information/content* you will include in the final draft, albeit it in bullet point format.

Reasons for this format:

- Writing an outline before writing the full paper allows you to assess whether your sections contain pertinent information and flow logically.
- Bullet points allow you to focus on the content over wording

FINAL DRAFT

Content:

The topic of the paper is up to you (provided that it meets the above guidelines) – this means that I can only provide limited content guidelines before we discuss your chosen topic. However, the paper should have the following components (additional or alternative components can be discussed in our meetings):

- Title
  - Use your research question as your *subtitle*
- Introduction
  - What is the research question and why should we care?
  - Provide a brief overview of your paper at the end of the introduction.
- Background/Literature Review
  - Carefully define your terms and scope.
  - Summarize the pertinent literature connected to your research question.
- Methods
  - How will you be answering your question?
- Analysis/Results
  - What have you found and why do you draw these conclusions?
- Conclusion and Discussion
  - Summarize your findings and put them into context.
  - What are the implications of your findings?
  - Are there any significant shortcomings of your work you need to address?

Format and Writing:

- There is no required length for the final paper. This is all about quality over quantity. As a guideline I would expect a high quality paper to be somewhere around 5 *single-spaced* pages.
- Please format the paper as follows:
  - **Single spaced**
  - 11 pt font (preferably Times New Roman)
  - Margins between 0.5 and 1 inch
- Other:
  - Proofread your writing and make sure it is grammatically correct.
  - Language used should be clear and precise.
    - Floral or dramatic language should not find its way into an academic essay.
  - Pay special attention to organization and logical coherence.
    - Feel free to use sub-headings liberally – they make it easier for a reader to follow your argument.
  - Cite your sources.
    - Use whichever citation style suits you best, just make sure to be consistent.
    - Use direct quotations sparingly.

RUBRICS

Paper Topic (graded out of 30*)

	A+	A	B	C	D	F	∅
	***	Very Strong (9.5 pts.)	Strong (8.5 pts.)	Adequate (7.5 pts.)	Poor (6.5 pts.)	Very Poor (5.5 pts.)	No Attempt (0 pts.)
Research question Is there an explicitly-mentioned research question? Is the research question logically coherent? Does it relate to the class? Is the question answerable within the scope of the assignment?	☐	☐	☐	☐	☐	☐	☐
Topic explanation Does the explanation provide context for the research question? Is it clear why this is an important question? Does it provide scope for the paper? Is there an explanation why the author cares?	☐	☐	☐	☐	☐	☐	☐
Logical consistency, language, grammar, etc. Is the argument/explanation coherent? Does the paragraph use clear and precise language? How well does the brief avoid errors in grammar, syntax, spelling, etc.? How carefully proofread does the work appear to have been?	☐	☐	☐	☐	☐	☐	☐

First Draft (graded out of 30*)

	A+	A	B	C	D	F	∅
	***	Very Strong (9.5 pts.)	Strong (8.5 pts.)	Adequate (7.5 pts.)	Poor (6.5 pts.)	Very Poor (5.5 pts.)	No Attempt (0 pts.)
Logical consistency Is the argument/explanation coherent? Does the sections cohere? Does one point follow logically from the previous one?	☐	☐	☐	☐	☐	☐	☐
Thoroughness of the research Is there sufficient information to follow the argument? Is the information provided pertinent to the research question? Does the draft demonstrate honest attempt at completing all research necessary to complete the final paper?	☐	☐	☐	☐	☐	☐	☐
Language, grammar, etc. Does the language/bullets allow the reader to understand the arguments? How carefully proofread does the work appear to have been?	☐	☐	☐	☐	☐	☐	☐

Rubric for the final draft will be distributed in the coming week.

* To allow Canvas to automatically calculate your final grade, your 30 point score will be converted to a score out of 7.5 and 17.5 for the paper topic and the first draft, respectively. I will post your 30 point score in the comments. The conversions are somewhat complicated, but I would be happy to explain the calculations if you are interested.

Appendix A5: Syllabus Addendum

POLS 332: CLIMATE CHANGE: POLICY AND POLITICS

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Syllabus Addendum: Taking the Class Online

Important: *This document supplements the original course syllabus. Any due dates listed in this addendum take precedence over dates listed in the original document. Aspects of the course the addendum does not address remain in place as specified in the original document. While this addendum aims to address all necessary course changes, I may have to make additional adjustments if new developments necessitate these.*

Goals

Goals and expectations may be subject to change, but this addendum was designed to accomplish the following:

- Allow you to complete this class with minimal disruption to your school records and timelines
- Provide flexibility needed to accommodate the different learning/study environments we now face
- Ensure that you still walk away with significant understanding of climate change policy

Communication

During the current campus closure, you can reach me via email (ukreitmair2@unl.edu) or speak with me one-on-one via Zoom (simply email me to make an appointment, I will send you a Zoom link). Given that all instruction will now be remote, please ensure that you receive all communication in a timely manner. This means you will have to check your Huskers email account frequently and you will have to ensure your Canvas notification settings are appropriate (see https://teaching.unl.edu/keep-learning/ for further information on what this means).

Adjusted Class Structure and Expectations

"In-class" Work

- Being mindful of different internet reliability and access, the course will proceed in a mostly asynchronous manner:
    - *There will be weekly deadlines for "in-class" work – Sunday 11:59pm*.
        - You must complete the three tasks described below by that time.+6
    - This structure means that:
        - You do not have to log in at a specific time to watch or complete an assignment (as long as you do so by Sunday).
        - To a certain extent, you can work ahead – although exams will only be available for a set time.
- Each week you will be required to do the following:
    1. Watch/listen to short *recorded lectures* (1-3 depending on the topic/week)
    2. Complete a *brief quiz* on the material. Your performance on the corresponding quizzes will count toward your in-class score.
    3. Complete one or two *assignments* on the topic.
        - Scores on these will count toward your in-class score.
        - You will *each* need to submit work, but you can work on the assignments as groups (and each submit the same work).
            - *Groups* – I will send out a mandatory survey that asks whether you would like to work in groups or individually. If you wish to work in groups, I will assign those of you who prefer working in groups into small groups of about 4 individuals (unless you already have a group organized). Individuals who prefer working by themselves for these assignments may still do so.
                - This survey will be due **by Wednesday 04/01.**
            - If you work in a group, you will have to coordinate amongst yourselves using Zoom, Google docs or anything else that works.
        - Depending on the week, the assignments could take the following formats:
            - *Worksheets*
            - *Discussion questions*
                - These are designed to mimic the discussions we had in class and will need to be answered (using bullet points) based on your readings, potentially other resources, and some considered thought
- This in-class work needs to be completed by everyone, regardless of the track (see below) you choose to follow.

Exams and Final Paper

- To reduce pressure on students (and survey results overwhelmingly suggest that you prefer this change), I have decided to allow students to complete *either* the two remaining exams *or* the final paper. In a mandatory survey I will ask you to commit to one of the following tracks **by Wednesday 04/01**.
    - *Track A – Two Exams*
        - You are required to complete the two remaining exams (one for the international part of the class, one for the domestic part of the class), but not the final project.
            - *Exam II* (International Policy) will be available Monday 04/06 at 9am and will be due **Sunday 04/12 by 11:59pm**.
            - *Exam III* (Domestic Policy) will be available Monday 04/27 at 9am and will be due **Sunday 05/03 by 11:59pm**.
        - Both exams will be more involved/longer than originally planned and account for your more of your final grade. I tentatively expect them to take about four hours of solid work.
        - Your final grade will be calculated out of 80
            - 10 for presentations
            - 10 for Exam I, 15 for Exam II, 15 for Exam III
            - 30 for in-class/online work
        - The paper topic write-up you submitted with count toward your in-class score.

    - *Track B – Final Paper*
        - You are required to complete the final paper, but no more exams.
            - The final paper is due **Thursday 05/07 11:59pm**
            - The first draft is due **Sunday 04/19 11:59pm**
        - I will meet with you twice (via Zoom) – I will send you a meeting sign-up sheet.
            - Meeting 1: **Friday 04/03 or Monday 04/06** to provide you with feedback on your paper topic and discuss any questions you might have.
            - Meeting 2: **Monday 04/27 or Tuesday 04/28**
        - For this track your final grade will also be calculated out of 80 but weighted differently
            - 10 for presentations
            - 10 for Exam I
            - 30 for the final paper
            - 30 for in-class/online work
        - The paper topic write-up you submitted will count toward your final paper score (as discussed in the final paper instructions)

Presentations

- For students still scheduled to present, here are your updated instructions/requirements:
    - Presentation groups and content remain the same. Each group must still share their slides with me.
    - Each student will use VidGrid (https://its.unl.edu/services/unl-academic-video/) to record a narration of your slides (i.e. audio-record your presentation while the screen captures the slides you are narrating).
        - Submit this recording via Canvas **by Saturday 04/04 11:59pm**.
        - This recording does not have to be coordinated with your group members. In other words, I expect a unique submission from each one of you.
- For all students: expect an assignment (counted toward your in-class grade) involving listening to/watching the presentations and answering questions.

Adjusted Missed Class Policy
(Please see original syllabus for policies on: late work, grading, and other important information)
Missed Class Policy
Given that missed classes no longer make sense in an online class structure, I am adjusting the policy as follows: *I will drop the four lowest in-class scores for each student.* Clarifications:

- Lowest scores may be from in-person or remote class sessions.
- Any unexcused absences that I have already dropped count toward this four drop limit.

Excused absences do not count toward this limit. Rather, I will use the submitted work to input a grade for the missed class.

Appendix A6: Online Course Structure

Spring 2020
Home
Syllabus
Modules
Announcements
Grades
People
UNL Library Resources
Instructor Course Evaluations
Office 365
Assignments
Collaborations
Discussions
Pages
Files
Quizzes
Outcomes
Conferences
Settings

View All Pages | Published | Edit

Week 12 Treaty Effectiveness and the Paris Agreement

This week wraps up our discussion (from before the hiatus) of treaty effectiveness and provides an overview of the Paris Agreement. I have uploaded corresponding short lectures. For each lecture I have also provided the audio file in case there are broadband issues. The material is otherwise identical.

At the bottom of the page you will find the associated assignments that are **due Sunday, April 5th by 11:59pm**.

Readings for the week

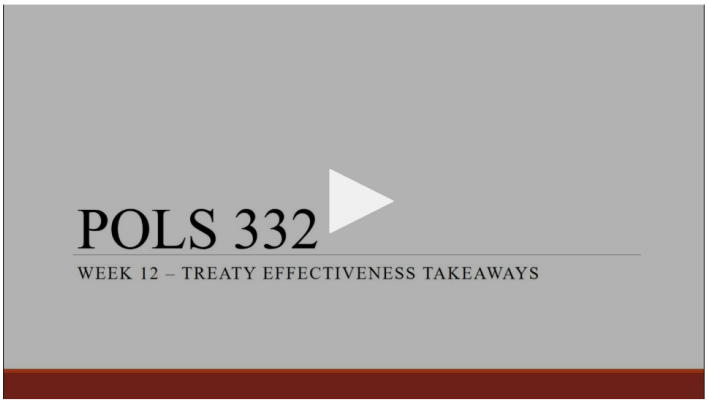
- UNFCCC (skim)
  - Overview: http://unfccc.int/kyoto_protocol/items/2830.php
  - Paris Agreement overview: http://unfccc.int/paris_agreement/items/9485.php
  - Paris Agreement text: http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf
- Jacoby, H.D. & J. Morris. (2018, December 04) "Why the Next Two Years are Critical for the Paris Climate Deal's Survival" The Conversation: http://theconversation.com/why-the-next-two-years-are-critical-for-the-paris-climate-deals-survival-107931
- Wirth, D. (2016). "Is the Paris Agreement on Climate Change a Legitimate Exercise of the Executive Agreement Power?" *Lawfare: https://www.lawfareblog.com/paris-agreement-climate-change-legitimate-exercise-executive-agreement-power*

Slides

POLS332_w12_Treaty Effectiveness.pdf

POLS332_w12_Paris Agreement.pdf

Lecture: Wrapping up Treaty Effectiveness



Audio:

Lecture: The Paris Agreement - Overview

Audio:

Lecture: The Paris Agreement - Context

Audio:

Assignments

Lecture quiz: POLS 332 Week 12 Lecture Quiz

Paris Agreement assignment: W12 Paris Agreement Assignment

(Optional) Extra credit assignment - for Exam I: Extra Credit for Exam I

Appendix B: Student Work

Extra-Credit Assignment Submission B1

1. Is the Trump administration or the Obama administration estimate of the social cost of carbon higher? Aside from political motivations, what accounts for this difference?

In order to quantify the costs and benefits of regulatory climate policies, federal agencies and international organizations calculate what is known as a 'social cost of carbon.' The SCC is a calculation founded by the George W. Bush Administration following a court dispute regarding the administration's car emission policy. The Obama White House went a step further and created an interagency task force that worked to calculate and update the SCC in the United States approximately every three years. With federal law requiring the United States government to not only regulate greenhouse gas emissions but also to report the economic impacts of each regulatory practice, the SCC provides a simple dollar amount of the money saved or lost due to harmful emissions. With input from various agencies including, but not limited to the EPA, Treasury Department, National Economic Council, and the Department of Energy, the Obama Administration concluded that the SCC sits around thirty-six dollars. Scientists argue that the Obama Administration figure is likely an underestimate of the true SCC due to outdated methodology and new studies that were published following the release of the Administration's estimate.

In late 2017, the Trump Administration released their own estimates of the SCC. The alarmingly low estimate of the SCC, ranging between one- and seven-dollars shocked scientists, environmentalists, and economists. The seismic gap between the two estimates was created not by accident, but rather is the product of variations in data used, policy differences, and methodology used to calculate this figure. Understanding that global emissions do not only cause damage within the state border in which they are produced, the Obama Administration factored in damages caused around the world due to emissions. The Trump estimate only factors in damages that will be seen inside US borders. This individualistic view from the Trump Administration follows his America First rhetoric that energized a broad coalition of voters. An isolationist viewpoint, however, is useless in climate policy as emissions know no borders and will impact the entire world, no matter their origin. Certain areas will be disproportionately impacted by climate change and will likely cause an influx in refugees and those needing assistance from the United States. Only calculating the damages inside the United States produces a smaller estimate and helps the Administration move closer to deregulating environmental regulations on cars and manufacturing.

A second factor in the smaller SCC estimate is the Trump Administration's disregard for the impact that climate change with have on future generations. With damages from climate change being multi-generational, damages will increase in severity over time. Without factoring in future damages due to climate change, the Trump Administration nearly rendered their estimate obsolete as climate change is fluid and is constantly occurring. The SCC estimate is produced in order to understand how an additional ton of carbon will damage Earth in the future. Neglecting to account for future damages produces a figure that is useless in understanding damages produced by climate change: the very reason for the calculation of the SCC.

In addition to the exclusion of certain factors from the calculation, economists in the Trump Administration utilized the discount rate in a new way. The discount rate can present itself as a confusing tool that economists use to calculate future analyses of costs and benefits. In layman terms, a higher discount rate produces a lower SCC with a lower discount rate producing a higher SCC. The Obama Administration opted to use a discount rate hovering around 2.5% whereas the Trump Administration used between 3% and 7%, thus implying that money spent on climate change policies now would not be worth it in the future.

Which Administration's calculation is more accurate? That decision will likely be analyzed in court as rollbacks on emission regulations will be challenged by various groups. The Social Cost of Carbon allows for policymakers to have a clear cost-benefit analysis of what the fiscal implications on the damages done by climate change will be, now and in the future.

Extra-Credit Assignment Submission B2

Social Cost of Carbon Throughout Two Administrations

The Social Cost of Carbon is defined as the marginal cost of the impacts caused by the emission of one extra ton of greenhouse gas (in the carbon dioxide equivalent) at any point in time. There is no objective way or equation for determining the Social Cost of Carbon for a given country. This statistic is reached through a series of calculations based on assumptions of what the emissions in question affect, more specifically the Social Cost of Carbon is based on statistical models (the DICE Model, the FUND model, and the PAGE model) that are extremely sensitive to various assumptions incorporated within the models.

This lack of set calculating method that does not depend on subjective assumptions has led to wildly different Social Costs of Carbon statistics depending not only on what country is performing the calculations, but also the type of administration that oversees the calculating institutions. In the United States specifically, this problem has been a very prominent issue specially in the past couple of years due to the drastic change in administration that happened in 2016.

Compared to the Obama administration (2009-2016), the current Trump administration (2016-) has a much different Social Cost of Carbon. There are many reasons for this, and most of it has to do with the completely different assumptions made and implemented in the models mentioned above by the two different administrations. The Obama administration's assumptions led to calculations that yielded a much higher Social Cost of Carbon than any of the calculations released by the Trump Administration.

While it can be assumed that this decrease of the Social Cost of Carbon has some political motivations and can be reasoned through the lens of political advancements for certain parties or policies specifically, this change was made through an alteration of the assumptions held by the Obama administration.

These assumptions changes become glaringly apparent when looking at the estimates directly. As reference points between the two administrations it is beneficial to look at the estimated Social Cost of Carbon in the years 2015, 2030, and 2050. The Obama administration assigned the Social Cost of Carbon for these years as: $36, $50, and $69 respectively. In contrast, the same years yielded a different statistic for the Trump administration, most specifically: $6, $8, and $11.

One of the most important changes in assumptions that greatly helped make the two statistics between the two different administrations so different is the fact that the Obama administration considered the global impacts of emissions, while the Trump administration only considered the domestic impacts of emissions.

This one change makes a huge impact when it comes down to calculating the Social Cost of Carbon. There are many reasons why this change had such a drastic impact in the actual calculations between the two administrations. For example, when it comes to the actual impacts of emissions the United States will no be nearly as affected as the rest of the world (or more specifically the South and the East), which means that if global implications are not accounted for then the actual effects of emissions are having are not being counted. This also fails to account for things like spillover effects, which may affect things like migration, national security, and more.

The Social Cost of Carbon is a very beneficial statistic that can help different countries (specially a polluter as big as the United States) put their carbon emissions into perspective. With there not being a singular and uniform way to calculate it, this calculation can become very subjective and not nearly as helpful as it was designed to be. And unfortunately, with an executive order signed by president Donald Trump in 2017 that disbanded an interagency working group tasked with determining the annual social cost of carbon, it is hard to imagine what estimating the Social Cost of Carbon and actually becoming accountable for these emissions in the future is going to look like. At this point in time all that can be hoped is that these calculations will start being taken seriously and used to respect the earth the way it should be respected.

Exra-Credit Assignment Submission B3

The Social Cost of Carbon is a way to measure the economic harms of climate change and is measured in terms of the dollar value of releasing one ton of Carbon emissions in the atmosphere. It does this by projecting the expected costs of damages resulting from events of climate change, like extreme weather, disease spread, sea levels rising, and infrastructure damages among others. Because today's world operates only on the promise of money, it became necessary to equate the detriment on the environment with the projected dollar amount of damages accruing. It is essentially a tool of policy makers to illustrate the long-term detriment and subsequent cost of our emissions. It is also a tool to be able to account for the cost of mitigating our emissions—proving useful for illustrating costs of emissions, reduction, and mitigation. The cost of Carbon is established by the President during their term which provides an easy way to view how important climate change is to current administration. By the SCC, administrations essentially set the bar for the policies they will produce in relations to the climate. With a high cost of carbon, the administration highly values the environment, resulting in stringent climate policy, and vice versa.

President Obama had a higher Social Cost of Carbon than President Trump currently has, meaning he placed more economic value on the environment than we do today. This has obvious political motivations as Obama's Democratic party had vested interests in slowing climate change and Trump's Republican Party still mostly denies its existence—of course Obama would have a higher SCC. Other than this glaringly obvious caveat, there is a distinct difference in how each President calculated their SCC. Under the Obama administration, the SCC was calculated by comparing global climate benefits of reduction to domestic costs of emissions. This evaluated the United States in terms of the entire world, accounting for the global impact our own emissions have. By contrast, the Trump administration measures our cost of emissions against only the United States' benefit to emission reduction rather than the global benefit. This measures the United States' emissions in terms of...the United States' emissions. This model seems to completely lack account for emissions from other countries and runs as if the rest of the world does not exist—but that's not how climate change works. By measuring the SCC with the Trump administration's model, we completely leave out any consideration for the shared problem of climate change: emissions affect us all. When Carbon is released into the air there is no way to ensure it does not travel to another country's airspace, making it flat out wrong to evaluate the cost of our emissions only based upon our operations. We are affected by other countries' emissions and therefore must account for other countries when we emit Carbon.

By significantly lowering the Social Cost of Carbon, President Trump has ushered in a new era in American politics that cares little for the environment. In lowering the social cost of Carbon emissions, President Trump has placed more value on industry and production than the environment. The opposite notion had been the past foundation of previous climate bills, but now President Trump has the room he needs to expand into now-looser industries to increase production in industries and their profit all while giving little to no thought the environmental impacts.