

PUBP 3320: Climate Policy

Room: DM Smith 11

MWF 10:10 am – 11:00 am

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Office hours: MW 11:30 am - 1:00 pm (or by appointment)

Office: DM Smith 318

Course description

Climate change is a global problem and it requires an international response. The complexity of this environmental threat, its abstracted nature and the time lag between current costs and future benefits make the implementation of climate change policies very difficult. It is a global problem requiring unprecedented international cooperation and interdisciplinary investigation: engineering, economics, environmental studies and public policies.

This course aims to address the whole complexity of climate change, by bringing together the science of climate change, the analysis of impacts, and the economic and engineering strategies to reduce emissions. In this class, students will be actively engaged in exploring the scientific and economic issues underlying the threat of global climate change and the institutions engaged in negotiating an international response. Although complex issues will be studied in this course, there are no assumed prerequisite courses or advanced knowledge, and this course is appropriate for students in any major.

In the course, we will address several important questions: What is the scientific basis of climate change? What are the sources of emissions of greenhouse gases? What would be the impacts of climate changes on human well-being and on the natural world? What can be done to adapt to climate change to reduce losses and maximize benefits? What is the optimal way to curb carbon emissions? Should we price fossil or subsidize low-carbon energy? What technologies exist or might be developed to allow us to slow climate change? What types of international and national policies have been effective so far?

The course has the goal to provide a set of tools to approach these and many other fundamental climate policy questions. By the end of the course, students will be well prepared to apply fundamental economic and policy tools to address climate change questions, and to do so without fear or favor.

During the course students will work on a Team Project on the Georgia Tech Living Building. The project is sponsored by the SLS center. The project will allow students to apply their academic knowledge to practical assignments at Georgia Tech. Students will be able to identify inter-temporal relationship among ecological, social and economic systems in the context of climate change. They will also assess the impacts of Georgia Tech' choices on other entities at different space and time scale discussing the implicit social cost of carbon.

Course Materials

To facilitate discussion, all reading assignments must be read before the day of discussion. Come prepared to discuss the gist of the reading materials and be able to submit brief reflections prior to class. Additional course material is posted on T-square.

- Scott Barrett, Carlo Carraro, Jaime de Melo. "Towards a Workable and Effective Climate Regime." 10 November, 2015.
<http://www.voxeu.org/sites/default/files/image/FromMay2014/Climate%20change%20book%20for%20web.pdf>
- Richard S J Tol. "Climate Economics: Economic analysis of climate, climate change, and climate policy." Edward Elgar Publishing, Aug 29, 2014.
[\(https://sites.google.com/site/climateeconomics/\)](https://sites.google.com/site/climateeconomics/)
- Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report (AR5):
<https://www.ipcc.ch/report/ar5/>
- U.S. National Climate Assessment (NCA): <https://nca2014.globalchange.gov/>
- U.S. Climate Science Special Report (CSSR): <https://science2017.globalchange.gov/>

Course Assessment and Grades

Class Participation and Quiz	15
Climate Change Science/Policy News (2 news each worth 7.5 pts)	15
Short Assignments (4 assignments each worth 5 pts)	20
Living Building Project	25
Final	25
Total	100

[Grading: A: 100-90%; B: 89-75%; C: 74-55%; D: <54%]

Class Participation and In-class Quiz

There will be unannounced in-class quiz with questions based on the readings. Students are expected to participate in class discussion and they will be evaluated on their comments, questions, and arguments.

Oral Climate Science/Climate Policy news

Students will be assigned to make two oral presentations (each worth 7.5 points) on a particular news relevant to either the science of climate change or a recent climate change mitigation/adaptation policy at the local, state, regional, national, or international level. The news articles must be taken from one of the sources listed on page 7.

Sing up for news presentation on Jan 19, 2018.

There will be a News Day on March 12, 2018 when all students will have about 5 minutes to present a news about current climate policy strategies in the world.

Short Assignments

Students will be responsible for submitting four 300/600-word briefs that discuss the material covered in class or homework related to the topic covered in class.

Assignments are due the following days and have to be submitted on t square by the due date at 9 am. Late assignments will be penalized 1 point per day late, without prior permission from the instructor.

- Assignment 1: discuss one possible climate change impact in Georgia - use at least one peer reviewed article or the NCA report. Deadline: 9 am on Jan 29.
- Assignment 2: discuss of the discount rate affect the overall cost/damage of climate change in the Stern Review - use at least one peer reviewed article. Deadline: 9 am on Feb 21.
- Assignment 3: assess the historical trend of GA emission and emissions per capita (2005-2016) and the 2016 emissions mix. What is the sector that contributes the most to CO₂ emissions in GA? Compare total emissions and emissions per capita in GA with other two states and discuss your results. Deadline: 9 am on March 28.
- Assignment 4: estimate your summer trip/ideal trip emissions and the effect of different carbon prices (\$10, \$50 and \$100/tCO₂) on your trip decisions. Deadline: 9 am on April 6.

Project

PUBP 3320 Students will form two/four groups and each group will work on estimating avoided CO₂ emissions of the Living Building electricity consumption and compare them with another building. Then, students will assess the assumed social cost carbon in the living building.

- Team groups need to be formed by Jan 19, 2018.
- First draft submission by Feb 12, 2018 [first draft will include a description of the methodology used to develop the project and data needed]. [5 pts]
- Final draft submission by March 5, 2018 [final draft will include review of the literature, methodology, results and discussion]. [5 pts]
- Peer review by March 26, 2018 [each group will submit its review of another project, reviews will be discussed in class on March 26]. [5 pts]
- Final project submission by April 11, 2018 [each group will submit a final version of its project addressing reviewers' comments]. [5 pts]
- Presentation on April 18-20, 2018 [each group will present in class]. [5 pts]

Final

The final will be closed book and will include a mix of multiple choice and short answer questions. The exam will be delivered in class on the dates listed in this syllabus. The final is cumulative and covers material in the textbook and readings.

Extra Credit

Throughout the semester, extra credit opportunities may present themselves. These may include opportunities to participate in research experiments, extra credit questions, etc. Students are encouraged to pursue extra credit opportunities to improve their overall class grade.

Attendance

More than two absences will be noted. During class students cannot use their cell phone.

Changes in the Syllabus

The instructor periodically updates the syllabus and course content throughout the semester. Required readings beyond the textbooks, as well as supplementary readings, will be made available on T-square. Revisions, if any, will be announced in class and posted online with at least two weeks advance notice. Always check E-mail/T-Square for updates in assignments up to 24 hours before the next class.

Honor Code

Compliance with the Georgia Tech Honor Code will be strictly enforced in the class. The text of the honor code can be found at:

<http://www.deanofstudents.gatech.edu/integrity/page.php?acadcode.htm>

Plagiarism

Plagiarism, fundamentally, is representing someone else's work as one's own. Reproducing (even a small piece) of someone else's text exactly, or restating someone's original ideas without attribution is strictly prohibited. It is always appropriate to cite the source or to use a quotation with proper attribution. It is also appropriate to credit any charts, graphs or other graphics (pictures, etc.) if they are not original, including when they have been slightly modified from the original.

Students with disabilities

If students have a documented disability and wish to discuss academic accommodations, please contact me as soon as possible. Please register through the ADAPTS Office.

Serve-Learn-Sustain (SLS) initiative

This course is part of Georgia Tech's Serve-Learn-Sustain (SLS) initiative, which provides students with opportunities to combine their academic and career interests with their desire to make worthwhile contributions to the world and build sustainable communities where people and nature thrive, in Georgia, the United States, and around the globe. More information about SLS can be found at www.serve-learn-sustain.gatech.edu.

Weekly Schedule

Date	Lecture	Topic
10-Jan	1	Course introduction and overview
12-Jan	2	What do you know about climate change? Myths vs Truths
Part I SCIENCE		
19-Jan	3	The role of past climate observations in formulating climate policy <i>IPCC, AR5, WG1, TS (pp. 37-41, 46; Figure TS 12)</i>
22-Jan	4	Why does climate policy usually address CO2 emissions? <i>CSSR, Chapter 2, pp. 73-86; Tol (pp. 3-11; 17-27)*</i> Team groups formed; sign up for news presentation
24-Jan	5	Learning about emissions drivers for an efficient climate policy: the Kaya Identity <i>IPCC, AR5, WG3, Chapter 5 (pp.357-360; 364-368; 371-373; 375-380); Tol (pp. 364-369 and 374-375)*</i>
26-Jan	6	What should be the goal of an international climate agreement? Future climate scenarios <i>CSSR, Chapter 4, pp. 133-138; IPCC, AR5, WG1, pp.102-105</i>
Part II IMPACTS and ADAPTATION		
29-Jan	7	The impacts of climate change <i>Tol, pp. 74-76; IPCC, AR5, WG2, TS (pp.37, 40, 42-44, 47; 59-60; 62; 66-68;-70-73)</i> Assignment 1
31-Jan	8	Monetary valuation to inform policy decisions <i>Tol pp. 76-83; Atkinson and Mourato 2008, pp. 318-325</i>
2-Feb	9	The climate damage functions <i>Bosello et al. 2012; Diaz and Moore 2017 (Table 1, Figure 2)</i>
5-Feb	10	Discounting and the future climate damages <i>Atkinson and Mourato 2008 pp. 330-332; US Council of Economic Advisers, 2017 pp.3-9</i>
7-Feb	11	The cost of climate change Impacts and the equity dimension <i>Tol, 2018; pp. 1-10</i>
9-Feb	12	Climate policy decisions should use the global social cost of carbon, why? <i>NAS, 2017 pp. 9-15; Nordhaus 2017; Revesz et al. 2017</i>
12-Feb	13	Living in a warmer world? Adaptation policies <i>Mendelsohn (2000) pp.583-591</i> First draft submission GT Living Building Project
Part III CLIMATE CHANGE MITIGATION POLICY		
14-Feb	14	Why is climate change policy needed? The global commons problem <i>Nordhaus (1999)</i>
16-Feb	15	Policy instruments: command-and-control or market based? <i>Goulder and Parry (2008) (pp. 152-159; 166-171); Chapter 4 Tol (don't read 4.4-4.5, 4.10 and 4.12-4.13)*</i>
19-Feb	16	Market-based responses: meeting Pigou and Coase <i>Stavins (2011) pp. 94-103</i>

21-Feb	17	The cost of climate mitigation <i>McKinsey (2009); Kesick et al. (2011)</i>
23-Feb	18	Climate Policy: cost and benefit analysis <i>IPCC, AR5, WG3 Chapter 3.6 pp. 225-232; Chapters 9 Tol (9.2 and 9.11)*</i> Assignment 2
26-Feb	19	Why people don't believe in science? <i>Campbell and Kay (2014); Harvey et al. (2017); nyt.com</i>
Part IV REAL WORLD CLIMATE MITIGATION POLICY STRATEGIES		
28-Feb	20	Is there an evolution of climate change policy? <i>Chapter 4 Barrett et al.; Babiker et al. (2002)*</i>
2-Mar	21	From the KP to the Paris agreement <i>Shishlov et al. (2016); Iyer et al. (2017)</i>
5-Mar	22	Participation, stringency and compliance: is it possible in a climate change international agreement? <i>Bodansky (2012); Barrett (2008)</i> Final draft submission GT Living Building Project
7-Mar	23	National climate policies around the world <i>IPCC, AR5, WG3, Chapter 13 (13.7 only); Newell et al. (2014); World Bank 2014 (only Executive Summary); Estrada et al. 2017</i>
9-Mar	24	Climate policy in the Trump era <i>vox.com; nyt.com; Stavins blog 2018; Martin and Saikawa (2017); Chapter 10 (pp. 143-150) and 17 (pp. 143-150) Barrett et al.*</i>
12-Mar		News day: Students will present a news about a climate science fact or a climate policy around the world
14-Mar	25	Trade and Climate: trade of emissions or trade of goods? <i>Barrett et al.*chapter 16 (pp. 225-234) and 21 (pp. 297-309)</i>
16-Mar		GT Living Building Project discussion: current status and future developments Peer Review Final draft submission GT Living Building Project
19-23 Mar - Spring Break		
Part V MITIGATION OPTIONS ACROSS SECTORS		
26-Mar	26	The Green Paradox <i>Sinn (2015); Jensen et al. (2015)*; van der Ploeg et. (2015)*</i>
28-Mar	27	Mitigation strategies in different sectors: where is cheap to reduce? <i>CSSR, Chapter 14 (pp. xx-xx), NCA, Chapter 27; IPCC, AR5, WG3, Chapter 7 (519-533)</i>
30-Mar	28	The power sector: cleaner energy, nuclear energy? <i>IPCC, AR5, WG3, Chapter 7 (554-559); Kriegler et al. (2014)*; Victor and Kennel (2014)*; Chapter 23-24 Barrett et al.*; nyt.com</i> Assignment 3
2-Apr	29	Energy efficiency and the Rebound effect <i>Gillingham et al. (2015)</i>
4-Apr	30	More forests is always good for climate, right? <i>Favero et al. 2018</i>

6-Apr	31	Uber, zipcar, EV or public transportation? climatecentral.org ; nyt.com ; vox.com ; IPCC, AR5, WG3, Chapter 8 (603-610 and 613-618)*
9-Apr	32	Food: our diet, our carbon foot print? Vermeulen et al. (2012); Scarborough et al. 2014; nyt.com Assignment 4
11-Apr	33	Geoengineering and the governance problem Victor et al. (2014); Horton et al. (2015); Chapter 25 Barrett et al.* Final paper project GT Living Building Project
13-Apr	34	tbc
16-Apr	35	tbc
18-Apr		Students' presentation
20-Apr		Students' presentation
23-Apr		Recap
30-Apr		Final
*optional readings		

List of sources for News Presentation:

1. BBC Science and Environment: http://www.bbc.com/news/science_and_environment
2. Belfer Center - Harvard:
http://belfercenter.ksg.harvard.edu/topic/37/environment_and_climate_change.html
3. Brookings institute <http://www.brookings.edu/>
4. C2ES: <http://www.c2es.org/newsroom>
5. Climate Central: <http://www.climatecentral.org/>
6. Columbia- Earth Institute <http://www.earth.columbia.edu/>
7. Dot Earth: <http://dotearth.blogs.nytimes.com/>
8. Environment 360 Yale: <http://e360.yale.edu/>
9. EPA: <http://www2.epa.gov/newsroom>
10. European Environment Agency: <http://www.eea.europa.eu/media>
11. International Energy Agency: <https://www.iea.org/newsroomandevents/news/>
12. National Geographic: <http://www.nationalgeographic.com/climate-change/special-issue/>
13. Nicholas Institute: <https://nicholasinstitute.duke.edu/news>
14. NYT: <http://www.nytimes.com/>
15. Resource for the future: <http://www.rff.org/news/Pages/default.aspx>
16. Robert Stavins: <http://www.robertstavinsblog.org/>
17. The Guardian: <http://www.theguardian.com/international>
18. UNFCCC: <http://newsroom.unfccc.int/>
19. White House: <http://www.whitehouse.gov/energy>
20. World resource institute: <http://www.wri.org/about/news/all>