

**SYLLABUS**  
**AAE 643: FOUNDATIONS OF ENVIRONMENTAL AND RESOURCE ECONOMICS**  
**UNIVERSITY OF WISCONSIN - MADISON**  
**SPRING 2020**

**I. GENERAL INFORMATION**

**INSTRUCTOR:**

Prof. Corbett Grainger  
412 Taylor Hall  
608.262.3651  
corbett.grainger@wisc.edu  
Office hours: Mondays 3-5:00 (or by appointment)

**TEACHING ASSISTANT:**

Adam Theising  
theising@wisc.edu  
Office hours: Wednesdays 9-11:00

**LECTURE INFORMATION:**

Class Location: Engineering 2239  
Class Meetings: Tues/Thurs 2:30pm to 3:45pm  
Credit Hours: 3 Credits

**How 3 credits are earned:** the class is organized based on an expected time investment of 45 hours of work per credit hour. One credit is the learning that takes place in at least 45 hours of learning activities, which include time in lectures or class meetings, in person or online, preparing homework, exams, presentations, tutorials, reading, writing, studying, preparation for any of these activities, and any other learning activities.

**Course URL:** <https://canvas.wisc.edu/courses/91150>

**II. INSTRUCTIONAL INFORMATION**

**Instructional Mode:** All face-to-face

**TEXTBOOK AND READINGS:**

The main textbook will be

Daniel J. Phaneuf and Till Requate, *A Course in Environmental Economics: Theory, Policy, and Practice*, Cambridge University Press, 2017.

You can order the book from Amazon or directly from the CUP website (note that a paperback version is available).

I will augment the book with journal articles designed to illustrate the contemporary application of ideas covered in the text. Articles and supplemental materials will be posted on Canvas.

## COURSE REQUIREMENTS

Your course grade will be based on your performance on one midterm exam, a comprehensive final exam, several homework/reading summary assignments, a writing assignment, and participation in class. The following percentages will be used to determine your final mark:

Midterm Exam	25 percent
Final Exam	25 percent
Homework/reading assignments	20 percent
Paper	20 percent
Participation in class	10 percent

The midterm exam will be sometime around week 9 of the semester. The final exam is scheduled for **May 6 at 2:45 pm. I may, however, move the exam to the last week of class.**

Homework assignments will be a mixture of analytical exercises, empirical analysis, and short reviews of current literature.

For the paper students will prepare a 10-15 page literature *critique* on a contemporary empirical topic that we will agree on together. A literature critique is more than a literature review in that it should go beyond simply describing what has been written on a topic. I will give you more specific guidance during the semester, but here are a few examples of things your paper should cover:

- Historical motivation for the topic
- Identification of key legacy and recent papers
- Summary of theoretical and empirical knowledge
- Data sources and methods used in the area
- Discussion of limitations in the current literature
- Suggestions for research that would fill existing knowledge gaps.

If you are taking another course that also requires a paper, I encourage you to select a topic that can be used for both assignments. I will set up a meeting with each of you during the first half of the semester to discuss ideas for topics. A first draft of your paper will be due by week 14 of the semester, with the final draft due the last day of class.

## GRADING

I will determine your grades based on the following percentages, which will arise from the numerical scores I assign to each of the components:

$\geq 93\%$	A
$< 93\% \ \& \ \geq 88\%$	AB
$< 88\% \ \& \ \geq 83\%$	B
$< 83\% \ \& \ \geq 78\%$	BC
$< 78\% \ \& \ \geq 70\%$	C
$< 70\% \ \& \ \geq 60\%$	D
$< 59\%$	F

### **CAPSULE STATEMENT:**

This course will provide a survey of environmental and resource economics, including canonical ideas and contemporary research questions. Focus areas include foundational models of human/environment interactions, definition and evaluation of the suite of environmental policy instruments, measuring environmental costs and benefits, and examining natural resource use.

### **LEARNING OBJECTIVES:**

This course is designed to provide graduate students with interest in environmental and resource economics with a broad overview of the field's historical development, and its place in contemporary economics and policy. Students will come away with an appreciation for the breadth of topics that have been investigated, the analytical and applied tools used by environmental economists, and the field's evolution from a niche area into mainstream economics. Although the class will use quantitative methods, the emphasis is not on the mastery of technique. Instead, students will gain knowledge of the techniques that need to be mastered, in order to pursue research in the various topical areas.

### **PREREQUISITES:**

Students should have familiarity with micro theory at the level of AAE 635 and applied econometrics at the level of AAE 636.

## **III. COURSE ORGANIZATION**

### **PRELIMINARY TOPICS AND TIME ALLOCATIONS**

The following describes the preliminary topic list and my estimates on the amount of time we will spend. All that follows should be considered preliminary – I will make adjustments as the semester progresses. Most of the journal articles are recent empirical contributions that we will discuss after covering background material from the textbook. *This list may change slightly through the course of the semester; changes will be announced in class and on the course website.*

#### **Economics and the Environment**

Phaneuf and Requate, Ch. 1, 2, 3

#### **Environmental Policy**

Phaneuf and Requate, Ch. 4, 5, 7, 8, 9

Aldy, et al. 2020. "Looking Back at Fifty Years of the Clean Air Act." NBER Working Paper 26687.

Davis, Lucas W., and Christopher R. Knittel. "Are fuel economy standards regressive?." *Journal of the Association of Environmental and Resource Economists* 6, no. S1 (2019): S37-S63.

Evans, M. (2016). "The Clean Air Act watch list: an enforcement and compliance natural experiment." *Journal of the Association of Environmental and Resource Economists* 3: 627-665.

Fowlie and Perloff, (2013). "Distributing pollution rights in cap and trade programs: are outcomes independent of allocation?" *Review of Economics and Statistics* 95: 1640-1652.

Weber et al. (2016). "Does federal crop insurance make environmental externalities from agriculture worse?" *Journal of the Association of Environmental and Resource Economists* 3: 707-742.

### **Climate Change**

Phaneuf and Requate, Ch 21

Dell, Melissa, Benjamin F. Jones, and Benjamin A. Olken. "What do we learn from the weather? The new climate-economy literature." *Journal of Economic Literature* 52, no. 3 (2014): 740-98.

Carleton, Tamma A., and Solomon M. Hsiang. "Social and economic impacts of climate." *Science* 353, no. 6304 (2016): aad9837.

### **Trade and the Environment**

Phaneuf and Requate, Ch. 12

Aldy and Pizer (2015). "The competitiveness impacts of climate change mitigation policies." *Journal of the Association of Environmental and Resource Economists* 2: 565-595.

Kellenberg and Levinson (2014). "Waste of effort? International environmental agreements." *Journal of the Association of Environmental and Resource Economists* 1: 135-169.

Olmstead and Sigman (2015). "Damming the commons: an empirical analysis of international cooperation and conflict in dam location." *Journal of the Association of Environmental and Resource Economists* 2: 497-526.

Aichele and Felbermayr (2012). "Kyoto and the carbon footprint of nations." *Journal of Environmental Economics and Management* 63: 336-354.

Burke and Emerick (2016). "Adaptation to climate change: evidence from US agriculture." *American Economic Journal: Economic Policy* 8: 106-140.

### **Non-Market Valuation**

Phaneuf and Requate, Ch. 14-19

Muelenbachs et al. (2015). "The housing market impacts of shale gas development." *American Economic Review* 105: 3633-3659.

Currie et al. (2015). "Environmental health risks and housing values." *American Economic Review* 105: 678-709.

Taylor et al. (2016). "Disentangling property value impacts of environmental contamination," *Journal of Urban Economics* 93: 85-98.

Carson et al. (2014). "Consequentiality: a theoretical and experimental exploration of a single binary choice." *Journal of the Association of Environmental and Resource Economists* 1: 171-207.

Kling, C., D. Phaneuf, and J. Zhao, (2012). "From Exxon to BP: has some number become better than no number?" *Journal of Economic Perspectives* 26(4): 3-26.

### **Health and the Environment**

Phaneuf and Requate, Ch. 20

Rau et al. (2015). "Early exposure to hazardous waste and academic achievement: evidence from a case of environmental negligence." *Journal of the Association of Environmental and Resource Economists* 2: 527-563.

Deschênes, O., Greenstone, M. and Shapiro, J.S., 2017. Defensive investments and the demand for air quality: Evidence from the NOx budget program. *American Economic Review*, 107(10), pp.2958-89.

Barreca, A., Clay, K., Deschenes, O., Greenstone, M. and Shapiro, J.S., 2016. Adapting to climate change: The remarkable decline in the US temperature-mortality relationship over the twentieth century. *Journal of Political Economy*, 124(1), pp.105-159.

Schlenker, Wolfram, and W. Reed Walker. "Airports, air pollution, and contemporaneous health." *The Review of Economic Studies* 83, no. 2 (2016): 768-809.

Wrenn et al. (2016). "Unconventional shale gas development, risk perceptions, and averting behavior: evidence from bottled water purchases." *Journal of the Association of Environmental and Resource Economists* 3: 779-817.

### **Pollution Monitoring**

Zou, Eric. "Unwatched pollution: The effect of intermittent monitoring on air quality." URL: <https://static1.squarespace.com/static/56034c20e4b047f1e0c1bfca5> (2018): 1535772291252.

### **Environmental Justice**

Banzhaf, Spencer, Lala Ma, and Christopher Timmins. "Environmental justice: The economics of race, place, and pollution." *Journal of Economic Perspectives* 33, no. 1 (2019): 185-208.

## **Energy and the Environment**

Allcott, H. and M. Greenstone, (2012). "Is there an energy efficiency gap?" *Journal of Economic Perspectives* 26: 3-28.

Harstad, Bård. "Buy coal! A case for supply-side environmental policy." *Journal of Political Economy* 120, no. 1 (2012): 77-115.

## **IV. OTHER INFORMATION**

**Plagiarism:** Plagiarism is a serious offense. All sources and assistance used in preparing your papers must be precisely and explicitly acknowledged. Ignorance of what constitutes plagiarism or academic misconduct is not a defense. It is your responsibility to be sure. Copying even a few words or phrases or paraphrasing material without a reference constitutes plagiarism. Always cite your sources, including information from the internet (i.e. you can always give the URL). For more information on writing and source citation, the following may be helpful <http://writing.wisc.edu/Handbook/Documentation.html>

**Academic Integrity:** By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct comprises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. If you have any questions about what constitutes academic misconduct, please read the following information <http://students.wisc.edu/doso/acadintegrity.html> or speak with the instructor.

**Accommodations for students with disabilities:** "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. <http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>