Energy and Environment

New York University Stern School of Business
Syllabus
Spring 2016

Instructor: Gernot Wagner – Adjunct Faculty, NYU Stern School of Business; Lead Senior Economist, Environmental Defense Fund
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Phone: 617-406-1841
Office Hours: By appointment.

Teaching Assistants: TBD

Lectures: Thursdays from 6:00 to 9:00 p.m. in Room TBD.

Credits: Economics elective, 1.5 credits.

A. COURSE OVERVIEW AND OBJECTIVES

What determines the cost of a ton of coal? Is OPEC an oligopoly? Should we subsidize low-carbon or tax fossil energy? Do Prius owners drive more?

The course has two goals: to provide a set of tools to approach these and many other fundamental questions in energy economics, and to teach us to talk about them in plain English. Come prepared to argue both sides of each issue in class. Regular 1,000-word essays will reinforce class discussions and ask you to pick a side. Think Economist leader: crisp, logical, and always with a point of view.

By the end of the course, you will be well prepared to apply fundamental economic tools to a host of energy questions, and to do so without fear, favor, or jargon.

B. COURSE MATERIAL

All readings are available online or via the course website.

There is no textbook. Reading amounts vary by topic, week, and type of material. Use your judgment. If the report is 150 pages long, skim it. If it’s a non-technical, 5-page article, read it. If it’s a dense, technical economics paper, focus on the main results presented in abstract, introduction, and conclusion; don’t internalize footnote 18 from the technical appendix. In short, come prepared to discuss the gist of the reading materials and be able to participate in class discussions; 30 percent of your grade depends on it. Equally important, incorporate the readings into your essays.
Some articles on the list are quite technical: lots of math and econometric intricacies. In general, skip the proofs. We won’t be talking in symbols in class. But be prepared to discuss the intuition. Sometimes, of course, the math can be quite helpful, and we will indeed discuss and derive certain equations in class.

Given the rapidly changing nature of energy issues, this syllabus will inevitably evolve—most likely during the semester. I will announce any changes to the reading list at least a week before the respective assignments in class.

There are many good general surveys that aren’t just interesting but also fun to read. One is Daniel Yergin’s *The Quest: Energy, Security, and the Remaking of the Modern World*. Another is David MacKay’s *Sustainable Energy – without the hot air*. Both will not just make you a better energy economist; they will also make you a better writer.

You may also enjoy *Climate Shock: the economic consequences of a hotter planet*. The whole book isn’t required reading, though the preface is on the reading list for week 1, and chapter 3 is on the syllabus for our discussion of climate externalities later in the course.

### C. GRADING

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<th>Type</th>
<th>Description</th>
<th>% of Final Grade</th>
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<td>Participation</td>
<td>Come prepared to class to discuss the readings, actively engage in the conversation, and relate the subject matter to real-world applications. Bonus points for anyone able to point to recent news stories relevant to the topic at hand. (Ideally, please email them to me a day in advance.)</td>
<td>40%</td>
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<td>Essays (x6)</td>
<td>Five essays (12% each) chosen from a possible twelve topics. Each of our six classes will cover two (often distinct) topics. You will be writing one essay after five of the six classes. You are required to write an essay after week 1. Essays are 1,000 words each (excluding footnotes and references), and are due as a Word or PDF file submitted electronically, by Thursday, 12:00 noon, one week after the topic appeared on the syllabus. Use “weekXy_NYU Net ID.pdf/docx” as naming convention for your attachments (e.g. “week1a_gw53.pdf”) but otherwise do not add any identifying information in the document itself—i.e. no name, email address, or picture. Do add a word count and make sure it comes within 50 words of 1,000 to avoid point deductions. If you submit more than five essays, your essay grades will be based on the best five of the first six submitted. The twelve topics are:</td>
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### Type | Description | % of Final Grade
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*Complete one of these two essays:*

**Week 1a:** Demand basics (*Elasticity, rebound effect*)

**Week 1b:** Supply basics (*Hotelling and Hubbert*)

*Complete one essay in at least four of the subsequent five weeks:*

**Week 2a:** Social Cost of Carbon (*Benefit-cost analysis*)

**Week 2b:** Carbon mitigation policies (*Domestic & global instrument choice*)

**Week 3a:** Energy paradox (*Consumer behavior*)

**Week 3b:** Green paradox (*Supplier behavior*)

**Week 4a:** Energy security (*Market power, elasticity*)

**Week 4b:** Fuel mix (*Substitution*)

**Week 5a:** Electricity (*Regulatory reform*)

**Week 5b:** Cars and trucks and things that go (*Second-best policies*)

**Week 6a:** Development (*Tradeoffs*)

**Week 6b:** Dual externalities (*Endogenous technical progress*)

Each essay should address the main question discussed in class and apply the pertinent economic concepts covered up to that point in the course. This is not an English course. You will primarily be graded on your economics and how well you can convey key concepts in jargon-free language.

| Total | 100% |

### D. GRADING POLICIES

All assessments are individual. Discuss the topic with each other; join up in reading groups; but submit your own, individual essays.

Essays are graded on a 10-point scale.

**Policy on late assignments:**

If you need more time, you will need to optimize in light of the following time-grade tradeoff: You will lose half a point for each day the essay is late—i.e. minus ½ between Thursday 12:01 p.m. and Friday 12:00 p.m., minus 1 between Friday 12:01 and Saturday 12:00 p.m., etc. Submissions will be accepted until 12:00 p.m. on the Monday after the due date. After that point, your essay will be marked as a zero, assuming it’s required (i.e. week 1, or if you don’t submit a sufficient total number of essays).
### E. COURSE OUTLINE

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<td>[Economic concepts:] Elasticity, rebound effect</td>
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**F. Acknowledgements**

This syllabus is based on several classes taught at various institutions. Its first incarnation was largely based on Snorre Kverndokk and Knut Einar Rosendahl’s Energy Economics class taught at Johns Hopkins in Spring 2009. I also take some cues from Bill Hogan’s Energy Policy Analysis class at Harvard, Paul Joskow’s former Energy Economics class at MIT, Erin Mansur’s former Energy Economics & the Environment class at Yale, Jim Stock’s U.S. Energy Revolution and its Implications seminar at Harvard, and invaluable feedback from, among others, Steve Salant, Thomas Sterner, Matt Zaragoza-Watkins, participants in an OurEnergyPolicy.org discussion forum, and Columbia students who have taken versions of this course in the past. Thank you to all.