ENVST-UA 450
The Intuitive and Counterintuitive in Policy Analysis
Fall 2021

Instructor Information

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● Office Address: Department of Environmental Studies, 285 Mercer Street, 10th floor.
● (Currently Virtual) Office Hours: Wednesdays, 2:30-4:30 p.m. Please sign up here. Alternatively, join me on a ~40-minute morning run. If none of these times work, please email me.

Course Information

● Class Meeting Times: Tuesdays & Thursdays, 9:30-10:45 a.m.
● Class Location: Global Center for Academic & Spiritual Life (GCASL), 238 Thompson St, New York, NY 10012, Room 379.
● Please take a look at the footer of the syllabus. It indicates the syllabus version in the YYMMDD format (also reflected in the name of this PDF file). This class is an experiment of sorts; the syllabus will change throughout the semester. Please make sure you work off the latest syllabus.

Course Description

How to make decisions in light of pervasive uncertainties? How to think about incentive structures faced by decision-makers, and think through unintended consequences of one’s decisions?

Economics, for better or worse, is organized common sense. No more, also no less. This class makes use of the toolkit given to us by economics and applies them to real-world policy problems.
Given my own background, the class will focus on questions around climate, energy, and the environment, though not exclusively. In the end, we will pick examples based on how well they help us expand our toolkit and answer specific policy questions.

What to make of the precautionary principle? What can economics teach us that engineering can’t? How to deal with constant learning, experimentation, and streams of new information?

Some of the questions we will be asking have clear answers. Many don’t. The biggest question to us then often is in how far the tools economics gives us can provide objective policy advice, and at what point do normative judgments—politics—take over.

We will develop our toolkit around these and many other questions, looking to the policy world—and the news—for ideas. In doing so, we apply economic insights, some basic mathematical tools, statistical thinking, and econometrics, and borrow fundamental ideas from various other disciplines—all in the service of turning ourselves into better policy analysts and, ultimately, more astute decision makers.

Course and Learning Objectives

The course has two goals:

1. To develop a toolkit to approach fundamental (environmental) policy questions with vigor and rigor, and
2. To help us talk about the tools themselves and the results of our analyses in plain English.

Three problem sets and three brief (800-word) policy memos will reinforce class discussions. The latter will also ask you to pick a side. Think Economist leader: crisp, logical, and always with a well-justified point of view.

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

Learning Assessment Table

<table>
<thead>
<tr>
<th>Course Objective Covered</th>
<th>Corresponding Assignment</th>
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<tbody>
<tr>
<td>#1</td>
<td>Three problem sets</td>
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<tr>
<td>#2</td>
<td>Three policy memos</td>
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<tr>
<td>#1 and #2</td>
<td>In-class midterm exam</td>
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<td>#1 and #2</td>
<td>Final exam</td>
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Readings

There are lots of textbooks with “policy analysis” in the title. Granger Morgan’s Theory and Practice in Policy Analysis (Cambridge, 2017), for example, provides a good overview. Its short
first chapter, “Policy Analysis: An Overview,” is on the readings for Week 1. Some parts will be on the syllabus throughout the semester and accessible via NYU Classes. (The full book is electronically available via NYU Libraries.)

Another good book providing a broad overview of the broad philosophy espoused here is Maxims for Thinking Analytically: The wisdom of legendary Harvard professor Richard Zeckhauser (2011), by Dan Levy. The book is a fun, easy read. The electronic copy costs $5 on Amazon, the paperback $10.

The key bit for us: learning the how and why, not just the what. Thinking Analytically does just that. An excellent example of a book focused on the how in a slightly different domain is Jordan Ellenberg’s How not to be wrong: The Power of Mathematical Thinking (Penguin, 2014). It looks to mathematics, not economics, as a guide, but it serves as a good template for what we are after in this course: apply rigorous thinking to important, every-day (environmental) questions.

Given the experimental nature of the course, we will fill in the readings for the course as the semester progresses, adjusting level of analysis and (mathematical and economic) rigor as we go along.

Most importantly, when faced with any readings, use your judgement.

If the report is 150 pages long, skim it.

If it’s a non-technical, 5-page article, study it.

If it’s a dense, technical paper, focus on the main results presented in abstract, introduction, and conclusion—and the general way of approaching the particular problem. Don’t internalize footnote 18 from the technical appendix. (Yes, that “focus” link leads to a Science article on “How to (seriously) read a scientific paper.” Take a look.)

In short, beginning with week 2 of the course, come prepared to class having done the readings for the day. We will work through examples and refine our thinking in class discussions. That is eminently more doable, if we all have the same basis for discussion.

Assessment Assignments and Evaluation

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<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>Problem sets</td>
<td>Three problem sets, 5% each.</td>
<td>15%</td>
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<tr>
<td>Short essays</td>
<td>Three short essays, 5% each.</td>
<td>15%</td>
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You might call them “policy memos.” You might call them “op-eds.” Either way, these three short essays have a point of view, they are well argued, and they come in at just around 800 words (sans bibliography). Make sure to use proper citations of materials, including those from the syllabus.
### Midterm exam
Exam with numerical problems and (brief) essay questions, mimicking the structure of the course—including problem sets and short essays. 20%

### Final exam
Exam with numerical problems and (brief) essay questions, mimicking the structure of the course—including problem sets and short essays. 40%

### Participation
Actively engage with the readings and participate in class discussions. 10%

**Total** 100%

All written assessments are individual. Discuss the topic with each other; join up in reading groups; come to office hours alone or in groups to discuss details; but submit your own, individual essays.

Problem sets are due, electronically via the course website, by the beginning of class on September 23rd, October 7th, and November 4th. Essays are due via the course website by 10:00 p.m. on September 30th, November 18th, and December 2nd.

If you need more time, you will need to optimize in light of the following time-grade tradeoff: You will lose 15% (not percentage points) of the total grade for each assignment immediately, and another 15% for each additional 24 hours.

To request a regrade on any assignment, send me an email with your full assignment attached, explaining your request within 1 week of receiving the graded assignment. I will re-grade the entire assignment—grades may increase or decrease as a result.

### Class Schedule

#### Topic 1: Policy analysis overview, and a bit of game theory

*Fridays, September 7th and 14th, 2021 [Note: no class on September 2nd, nor on September 9th]*

*Tools/concepts: 2x2 games, Nash Equilibrium, Subgame Perfect Equilibrium, Prisoners' Dilemma*

*Readings*

2. Fabre, Adrien and Gernot Wagner, “*Risky geoengineering option can make ambitious climate mitigation agreement more likely*," NYU Wagner Research paper (9 December 2019).
Recommended Reading


**Topic 2: Benefits and costs of climate change Aka Why benefit-cost analysis (should) reign(s) supreme**

*Thursday, September 16th and Tuesday, September 21st*

**Tools/concepts:** Net present value (NPV), discounting

**Readings**


**Topic 3: A closer look at the (very) long run**

*Thursday, September 23rd and Tuesday, September 28th*

**Tools/concepts:** Net present value (NPV), discounting

**Reading**


**Recommended Reading**


**Topic 4: It’s not over ‘til the fat tail zings Aka Limits to benefit-cost analysis**

*Thursday, September 30th and Tuesday, October 5th*

**Tool/concept:** BCA under (deep) uncertainty

**Readings**

1. [Readings to come, to be adjusted based on class/reading feedback after Topic 3.]
Topic 5: Repeat after me: the precautionary principle has no place in policymaking

*Thursday, October 7th and Thursday, October 14th* [No class on Tuesday, October 12th, a “legislative Monday” at NYU.]

*Tools/concepts:* Risk aversion, errors of commission vs. omission, decision-making under uncertainty

Readings
1.

**Midterm Review and in-class MIDTERM EXAM**

Midterm Review: *Tuesday, October 19th*
Midterm: *Thursday, October 21st*

**Topic 6: Rebound Effect: Can CAFE standards lead to more driving?**

*Tuesday, October 26th and Thursday, October 28th*

*Tools/concepts:* Engineering vs. economic thinking, price elasticity

Readings
1.

**Topic 7: Energy Paradox: Why don’t we all use CFLs and drive hybrids?**

*Tuesday, November 2nd and Thursday, November 4th*

*Tools/concepts:* Limits to the ‘rational’ model

Readings
1.

**Topic 8: Green Paradox: Can environmental policy lead to more pollution?**

*Tuesday, November 9th and Tuesday, November 16th* [Note: No class on Thursday, November 11th.]

*Tool/concept:* Time (in)consistency in policymaking

Readings
1.
Topic 9: How to decide when deciding is hard? Alternative decision criteria

Tuesday, November 18th and Thursday, November 23rd
Tool/concept: minimax, maximin, no-regret, etc.

Readings
1.

Topic 10: How to make decisions with limited resources Aka how to do economics 😊
Tools/concepts: Linear programming, Lagrange multipliers

Readings
1.

Topic 11: Stock versus flow

Tuesday, November 23rd and Tuesday, November 30th [Note: No class on Thursday, November 25th.]
Tool/concept: Markov chains, dynamic optimization

Readings
1.

Topic 12: Policymaking for posterity aka Your Analysis Toolkit for Policy

Thursday, December 2nd and Tuesday, December 7th
Tools/concepts: Decision-making under risk and uncertainty

Readings
1.

Final Exam Review & Final Exam

Thursday, December 9th and Tuesday, December 14th
FINAL EXAM date to be announced via Albert.

Diversity

I intend that students from diverse backgrounds and perspectives are well served by this course, that your learning needs are addressed, and that the diversity that you bring to class is viewed as a resource, strength, and benefit. I aim to present materials and activities that respect
diversity. I encourage your suggestions around course materials and approaches that will better serve this goal. I am continuously learning about diverse perspectives and identities. If something communicated in class (by anyone) made you feel uncomfortable, please reach out to me (either in person or electronically) or provide anonymous feedback. Also reach out to me and let me know ways to improve the effectiveness of the course for you or for other students or student groups.

**Academic Integrity**

Plagiarism results in failure in the class and referral to your academic dean. It includes: copying sentences or fragments from any source without quotes and references; not citing a source used in your papers; citing internet information without proper citation; presenting someone else’s work as your own; or inadvertently copying verbatim from any source. More detail can be found at [http://cas.nyu.edu/page/academicintegrity](http://cas.nyu.edu/page/academicintegrity). NYU offers academic support and tutoring at the University Learning Center: [http://www.nyu.edu/cas/ulc](http://www.nyu.edu/cas/ulc); (212) 998-8085.

**Moses Center for Students with Disabilities at NYU**

New York University is committed to providing equal educational opportunity and participation for students of all abilities. If you have a disability, or think you have a disability, please visit the [Moses Center for Students with Disabilities (CSD) website](http://cas.nyu.edu/page/mosescenter) and click on the Reasonable Accommodations and How to Register tab, or call or email CSD at (212) 998-4980 or mosescsd@nyu.edu for information. Students who are requesting academic accommodations are strongly advised to reach out to the Moses Center as early as possible in the semester for assistance. If you have already been approved for accommodations through the Moses Center, please meet with me so we can develop an implementation plan together.

**NYU’s Calendar Policy on Religious Holidays**

[NYU’s Calendar Policy on Religious Holidays](http://cas.nyu.edu/page/religiousholidays) states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. Please notify me in advance of religious holidays that might coincide with exams to schedule mutually acceptable alternatives.