Clean Energy and Innovation

ENVST-UA 900
Spring 2020
Monday, 5:00 p.m – 7:30 p.m.
12 Waverly Place, Room L113

Professor
Derek Sylvan - derek.sylvan@nyu.edu
Office hours: By appointment, Wilf Hall 318

Course Description
In this capstone seminar, students will explore the government’s role in accelerating technology development, assess how various policies could help meet climate and energy goals, and craft recommendations for how policymakers can help spur the advancement and adoption of promising energy technologies.

Students will research past government technology policies and programs and assess their relevance to clean energy development. The course will then explore various programs and policy tools that aim to spur energy innovation and help deploy promising technologies, including federal and state renewable energy policies, the Department of Energy’s ARPA-E program, the national labs, patent policies, and infrastructure plans. Students will assess how these tools could be used to achieve climate, energy, and economic goals, and then craft policy recommendations.

Students will be exposed to a variety of important concepts related to energy technology, public policy, scientific innovation, and economics. They will synthesize these concepts and develop policy recommendations that account for the real-world constraints of policymaking. As part of this process, students will also hone their skills in policy analysis, writing, and oral presentation.

Texts
Texts for this course will be made available through NYU Classes.

Disability Disclosure Statement
Academic accommodations are available to any student with a chronic, psychological, visual, mobility, learning disability, or who is deaf or hard of hearing. Students should please register with the Moses Center for Students with Disabilities at 212-998-4980.

NYU’s Henry and Lucy Moses Center for Students with Disabilities
726 Broadway, 2nd Floor New York, NY 10003-6675
Telephone: 212-998-4980 Voice/TTY Fax: 212-995- 4114
Web site: http://www.nyu.edu/csd
Plagiarism and Academic Support
Plagiarism includes: copying sentences or fragments from any source without quotes or references; not citing every source used in your papers; citing internet information without proper citation; presenting someone else’s work as your own; or copying verbatim from any source. Plagiarism often results in failure in the class and referral to an academic dean. You are subject to CAS’s guidelines on plagiarism: https://cas.nyu.edu/content/nyu-as/cas/academic-integrity.html.

Requirements
Students are required to attend every class session and complete all of the assigned reading. Each student will be assigned to a small research team, and the course will involve mix of individual and collaborative assignments, outlined below.

• **Compiling an annotated list of research sources** (semester-long assignment, completed individually but with sources/topics coordinated and shared among research team members)
  - ~ 3 sources per person per week
  - Citation (APA style) and hyperlink (if available) for each source
  - Description of content and key data/conclusions from that source, with the most relevant findings flagged

• Presenting research findings to the class and leading short class discussions

• Posting on the course message board as required

• Completing a case study on a relevant project/policy *(completed individually, max 1000 words)*

• Conducting a stakeholder interview and submitting a document with excerpts and conclusions *(completed individually, max 500 words)*

• Authoring a policy memo *(group project, max 1500 words)*

• Preparing and presenting sections of the final capstone presentation.

All written assignments/deliverables *(message board posts, case studies, policy memos, presentations, etc.) must be submitted by 10 a.m. the morning of the due date. Please email documents in Word or PDF format *(not Google Doc links)* to the professor, and submit Forum posts on NYU Classes.*

Late assignments/deliverables will only be accepted if you have a very good excuse and notify the professor by the submission time at the latest. The only exceptions to this policy are at the absolute discretion of the professor and will result in a reduced grade.

Grading Breakdown
Annotated research source document: 10%
Class presentations: 10%
Stakeholder interview: 15%
Case study: 20%
Policy memo: 25%
Contribution to capstone presentation/slides: 10%
Attendance, participation, and forum posts: 10%
Schedule
(Readings below are to be completed by the class date listed)

1/27
Course overview and introduction; Understanding the climate and energy landscape; Options for climate and energy policy

2/3
Federal and state approaches to energy innovation; New York State’s Climate Leadership and Community Protection Act
Readings:
- NRDC, “Climate Leadership and Community Protection Act Fact Sheet”

2/10
Current state of key clean energy technologies; Key players and policy levers for clean energy
Readings:
- Bernanke, “Promoting Research and Development…”
- Shreve and Schauer, “Deep Decarbonisation Requires Deep Pockets”
- Kolbert, “Can Carbon Dioxide Removal Save the World?”
Due 2/24:
- Research presentations: Current state of Federal/NY energy landscape

2/24
Economics of R&D and federal role in technology development; Past government technology innovation efforts
Readings:
- Yang and Oppenheimer, “A Manhattan Project for Climate Change?”
- Mowery et al., “Technology Policy and Global Warming…”
- Stine, “The Manhattan Project, the Apollo Program and Federal Energy…”
- Mazzucato and Semieniuk, “Public financing of innovation: new questions”
Due 3/2:
- Research presentations: Major technology development efforts currently in place
- Email current version of annotated research document for feedback

3/2
Technology-push programs and policy tools; Patents
Readings:
- Zaidi, “Advancing the Frontiers of Clean Energy”
- DOE, “ARPA-E: The First Seven Years” (skim)
- DOE, “Loan Program Office Financial Performance”
• DOE, “Annual Report on the State of the DOE National Laboratories” (skim)
• Bettencourt et al., “Determinants of the Pace of Global Innovation…”

Due 3/9:
• Research presentations: Technology-push policies
• Email with stakeholder interview update and case study topic choice

3/9
Demand-pull policy tools, deployment, and market adoption
Readings:
• Hansen et al., “Beyond Technology Push vs. Demand Pull…”
• Gaddy, “The Innovation vs. Deployment Debate in Energy…”
• National Governors Association, “State Strategies for Advancing the Use of Energy Storage”

Due 3/23:
• Research presentations: Demand-pull policies

3/23
Infrastructure, jobs, economic spillovers, multiplier effects; Oral presentation workshop
Readings:
• Vickerman, “…Economic Benefits of Transport Infrastructure Investments”
• EPA, “The Economic Benefits of Green Infrastructure: Case Study”
• Jones et al., “Job Impacts of California’s Renewable Portfolio Standard”
• Institute for Policy Integrity, “Does Environmental Regulation Kill or Create Jobs?”

Due 3/30:
• Stakeholder interview document (with excerpts and conclusions)
• Presentation on stakeholder interview
• Research presentations: Infrastructure, jobs, economic spillovers

3/30
International competition and cooperation; Interstate competition and cooperation; Stakeholder interview presentations
Readings:
• CEMAC, “Benchmarks of Global Clean Energy Manufacturing”
• Buckley & Nicholas, “China’s Global Renewable Energy Expansion”
• Ferris, “Energy Storage is America’s Industry to Lose”
• Casey et al., “How Does State-Level Carbon Pricing in the United States Affect Industrial Competitiveness?”

Due 3/30:
• Completed case studies
• Case study presentations
4/6
Energy politics and goal setting; Developing policy recommendations; Case study presentations
Readings:
Due 4/13:
- Policy memo outlines

4/13
Debate draft policy recommendations; Remaining case study presentations
Readings:
- TBD articles on recent news/policy developments
Due 4/20:
- Policy memo
- Policy memo presentations

4/20
Policy memo presentations; Capstone presentation planning
Readings:
- TBD articles on recent news/policy developments
Due 4/27:
- Capstone presentation outline and slides – first draft
- Final list of research sources (individual document)

4/27
Presentation run-through and feedback
Due 5/4:
- Capstone presentation slides – final draft

5/4
Final presentation run-through and feedback; Course conclusions

5/11
Final capstone presentations