PS471/571 – Science and Technology Policy
Spring 2020
Cramer 124 [We'll move soon]
W 16:00-19:00

Instructor: Taylor Dotson
Office: Fitch 205
Phone: x5211
E-mail: Taylor.Dotson@nmt.edu
Office Hours: T 11-12, W2-3, R 11-12, or by appointment

Course Description:
This seminar-based course provides an overview of selected topics in science and technology policy. Students will gain an understanding of the challenges, tensions, and problems within science and technology policy issues and be introduced to crafting policy relevant documents such as op-eds, policy briefs, and longer research reports. Themes may include the proper role of experts in policy-making, the regulation of risky technologies, comparisons of democratic and expert-led decision-making, resilient environmental policy, generative justice, sustainability, forecasting and managing technological change, public and private steering of R&D funding, strategies for stimulating innovation and technological transitions, intellectual property, science and technology-based entrepreneurship, and regional and national innovation systems.

The aim of this course is to impart the basic skills and aptitudes for understanding public policy in general and to guide students toward becoming mini-policy experts in an area of science and technology policy of their choosing. Considerable course time will be dedicated to one-on-one mentoring by the professor, independent work time, and group discussions.

Pre-requisites/Co-requisites: Junior or Graduate Standing

Place in Curriculum: General Education Core requirement, Area 4 – Social Sciences

Course Learning Outcomes:
This course explores the intersection of science, technology, and policy. Course assignments, moreover, will help students hone their analytical, writing, and oral presentation skills. By the end of the course, students should be able to: (1) Understand and describe the fundamental challenges, tensions, and processes of policymaking (2) Be capable of applying this understanding to issues within science and technology policy (3) Produce an opinion piece for a popular audience analyzing a policy issue (4) Write policy briefs/white papers that propose and/or evaluate policy alternatives

Program Learning Outcomes:
Students will: (1) Identify and communicate orally and in written language while attending to audience, purpose and context. (2) Apply strategies such as reading for main points; seeking key arguments, counterarguments, rebuttals; locating supportive documentation for arguments; reading from the perspective of different stakeholder lens; and rhetorically evaluate texts (3) Evaluate how well supported one's own arguments and those of others by quality sources and evidence; integrate support for their own claims with information from sources that are used and cited ethically and appropriately (4) Delineate a research problem or question. (5) Identify and gather information to address problem, and evaluate evidence and data for credibility (6) Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation (7) Draw on historical and cultural perspectives to evaluate contemporary issues, modes of thought, and or modes of expression; Recognize and articulate the diversity of human experience across a range of historical periods and/or cultural perspectives (8)

Discern the ethical and civic consequences of decisions and civilly engage with others when taking a position on those decisions

Course Requirements:

Required Texts:

Short required readings will be posted to Canvas weekly. For undergraduate students, their primary reading responsibilities will entail ongoing research into particular topics of their interest within science and technology policy. I expect students to read (2-4) articles or book chapters per week on their selected topic). Graduate students will be assigned readings from Deborah Stone's *Policy Paradox* and David Colander & Roland Kupers' *Complexity and the Art of Public Policy*

Recommended Resources

Issues in Science and Technology https://issues.org/
The New Atlantis https://www.thenewatlantis.com/
Journal of Science Policy and Governance http://www.sciencepolicyjournal.org/
The Scientist https://www.the-scientist.com/tag/science-policy
Science Magazine: Policy https://www.sciencemag.org/category/policy

Assignments

Attendance and Participation

This course is structure very differently from the normal STEM classroom. This 3-hour seminar will usually be split into three parts 1) A policy activity/student status updates/group discussion 2) Lecture on a facet of public policy 3) Guided work time where students begin to prepare for the following week. The goal of a seminar class is to help students develop confidence in being independent thinkers, careful listeners, apt researchers, and clear speakers. As such students must attend class, unless ill or facing a personal emergency, and prepare adequately. For most weeks, adequate preparation means having read a series of popular press and/or academic articles on the student's chosen topic for that week and having completed their writing response.

Any absence due to a non-emergency or failure to participate will negatively affect both the student's attendance and participation grades. Please contact the instructors if there is some significant reason why you cannot talk in class. You will be assigned an alternative reading and writing assignment.

Writing Response: Students main homework will consist of writing an approximately 500 word response to their readings for that week. This response should briefly summarize the major points of one or more of the assigned readings, discussing interesting examples or arguments and drawing connections between the readings. There will often be specific questions from the professor that the student should attempt to answer through the analysis of their reading. The point of the assignment is to help students collect and assess quality resources for later policy projects and op-eds. The responses will be rated on a 3-point scale: deficient, good, or exceptional.

Policy Op-Ed/Blog Post: The first major assignment is a 1200-1500 word article written for a popular audience that analyzes a relevant science and technology policy issue. The article should be accessible, making one or more concepts or examples from the assigned readings clear to readers and explaining how they help explain a policy problem and the conflicts that underlay it.

Policy Brief/Memo: The second assignment will be a more formal article (1500-2000 word), written as if it were addressed to policymakers. The point of a policy brief or memo is to clearly explain a public issue clearly and briefly to a busy person, describing not only the causes but also potential legislative and/or

regulatory solutions. See http://www.sciencepolicyjournal.org/2019nspnpolicymemocompetition.html for examples.

Final Project: The semester ends with a longer research project, where students conduct library research to go more in-depth into analyzing a science and technology policy problem. This will be done either individually or in pairs and culminate in both a paper and a presentation as well as a series of memos throughout the research and writing process.

Grad Students: 1000-1500 word review of *Complexity and the Art of Public Policy*

Course Schedule:
January 15 – What is Public Policy? Reading: Chao and Kartsios – "Leading on Transportation Innovation and Safety with AV 4.0" Chase – "Future of Autonomous Vehicles" Lecture: Market and the Polis Activity: Intro to Policy Thinking and Analysis: Problems, Solutions, and Metrics. Work Time: Choosing Initial Topics, Locating Suitable Readings

January 22 – Goals of Policy, Part 1. Reading: Wykstra- "Let Them Eat Efficiency." Lecture: Equity and (vs?) Efficiency. Activity: Discussion of Initial Research on Topics. Work Time: Researching equity/efficiency aspects of their topic

January 29 – Goals of Policy, Part 2: Reading: Owen – Is Noise Pollution the Next Big Public Health Crisis?" Wikipedia "Privileged Positions of Business and Science" Lecture: Security and (vs?) Liberty. Activity: Discussing goals paradoxes Work Time: Continued research. What policy goals characterize their topic?

February 5 – Policy Problems, Part 1: Reading/Watching: Pinker- Is the World Getting Better or Worse? Skim a critique, such as David Bell's "The PowerPoint Philosophe" or Jeremy Lent's "Steven Pinker's Ideas are Fatally Flawed…" Lecture: Symbols, Numbers, and Causes. Activity: Measuring Success and Failure. Impromptu Presentations Work Time: Uncover Conflicting Symbols, Numbers, Causes…

February 12 – **Policy Problems, Part 2:** Reading: Daniel Greenberg – "Science in the Public Sector: Who's Making the Decisions?" Lecture: Interests and Decisions. Activity/Discussion: In Whose Interests is Changing Science and Technology? Who Should Decide? Work Time: Settling on an Op/Ed Topic and Initial Argument

February 19 – Workshopping Policy Op-Eds
Students are to come to class with example sci/tech op-eds and outline of their own argument. The focus of the op/ed assignment is to breakdown a current or upcoming public problem in terms of policy paradoxes discussed so far.
Op-Eds Due Friday Feb 21 by 5pm

February 26 – Policy Solutions, Part 1. Lecture: Inducements and Rules Reading/Watching: Daniel Pink: "Drive: The Surprising Truth About What Motivates Us"; Schwartz – "Practical Wisdom and Organizations" Activity: Incentives, Rules, and Motivation in Wicked Problems Work Time: Who's Incentivized and How in Your Case?

March 4 – Policy Solutions, Part 2. Lecture: Rights and Powers Reading: Rothman – "Are Bosses Dictators." Recommended: Find an article on working conditions at Amazon or for Uber. Activity: Impromptu Presentations Work Time: Research alternative work/research/education structures.

March 11 – Policy Solutions, Part 3. Lecture: Facts and Experts. How Science Makes Scientific Controversies Worse. Reading/Watching: Sarewitz – "Stop Treating Science Denial Like a Disease" Recommended: Holthaus – Ice Apocalypse, Lomberg – Climate Alarmism Isn't Rational. Activity: Going Beyond "The Facts" in Scientific Controversies Work Time: Find Readings that Complicate Scientific Picture and Exposes Value Commitments

March 18 – Spring Break

March 25 – Policy Solutions Part 4. Lecture: Public Policy and Complexity. Bottom-Up Solutions to Public Problems. Reading: Dotson – "This Neighborhood in Germany Shows Us Why American Planned Communities are So Abysmal" Recommended: Skim another article or two on *Strong Towns* blog; Johnson – "Want Less Car Accidents? Remove Traffic Signs and Road Signals." Activity: Redesigning Top-Down Policies Work Time: Settling on Topics for Policy Brief

April 1 –Workshopping Policy Briefs
Students are to come to class with rough outlines/drafts of policy briefs. Lecture: Components of a Policy Analysis
Policy Brief Due Friday April 5, by 5pm

April 8 – Guided Work Day: Clarifying Policy Problem/Topic. Assembling Resources.
Memo 1 Due at End of Class

April 15 – Guided Work Day: What Goals? Whose Goals?
Memo 2 Due at End of Class

April 22 – Guided Work Day: Devising Intelligent/Complexity Respecting Solutions.
Memo 3 Due at End of Class

April 29 – Presentations
Papers Due May 1 by 5pm

Grading:
A = 100-93%; A- = 92-90%: B+ = 89-87%; B = 86-83%; B- = 82-80%; C+ = 79-77%; C = 76-73%; C- = 72-70%; D = 69-60%; F=<60%

Breakdown:
Attendance and Participation 20%
Weekly Reading Response Papers 20%
Op-Ed/Blog Post 15%
Policy Brief/Memo 15%
Final Project 30%

Counseling and Disability Services:
Reasonable Accommodations
New Mexico Tech is committed to protecting the rights of individuals with disabilities. Qualified individuals who require reasonable accommodations are invited to make their needs known to the Office of Counseling and Disability Services (OCDS) as soon as possible. To schedule an appointment,

please call 835-6619.

Counseling Services
New Mexico Tech offers mental health and substance abuse counseling through the Office of Counseling and Disability Services. The confidential services are provided free of charge by licensed professionals. To schedule an appointment, please call 835-6619.

Academic Honesty: New Mexico Tech's Academic Honesty Policy for undergraduate students is found starting on page 60 of the NMT Undergraduate Catalog, http://www.nmt.edu/images/stories/registrar/2014-2015_UNDERGRADUATE_Catalog_FINAL.pdf

New Mexico Tech's Academic Honesty Policy for graduate students is found starting on page 59 of the NMT Graduate Catalog, http://www.nmt.edu/images/stories/registrar/2014-2015_GRADUATE_Catalog_FINAL.pdf.

You are responsible for knowing, understanding, and following this policy.

Respect Statement: New Mexico Tech supports freedom of expression within the parameters of a respectful learning environment. As stated in the New Mexico Tech Guide to Conduct and Citizenship: "New Mexico Tech's primary purpose is education, which includes teaching, research, discussion, learning, and service. An atmosphere of free and open inquiry is essential to the pursuit of education. Tech seeks to protect academic freedom and build on individual responsibility to create and maintain an academic atmosphere that is a purposeful, just, open, disciplined, and caring community."