Science, Technology, and the Public Good
Public Policy 474
Winter 2023

Prof. Joy Rohde   Course: M/W 1:00-2:30 pm
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Office hours: Tues. and Fri., 3-4 or by appointment. Sign up via Canvas.

COURSE DESCRIPTION

Researchers, policymakers, and publics look to science and technology to address some of society's most pressing challenges, from climate change to public health to national security. But such efforts are also the subject of controversy and concern. Think of fears that automation will create mass unemployment, that biotechnology threatens human health and natural biodiversity, or that the regulation of toxins in the environment is either insufficient to protect the public or overzealously dangerous to economic good. This course examines the competing values that shape debates over how and when science and technology provide appropriate solutions to social problems. Its goals are: 1) to equip you with the interdisciplinary skills necessary to identify and analyze the values and assumptions that shape controversies over the relationship between science, technology, and social benefit; 2) to familiarize you with science and technology policy institutions and processes; 3) to provide you with the tools to advocate for socially responsible science and technology policy; and 4) to refine your abilities to write about the normative challenges that shape a variety of policy challenges. While we will focus on science and technology policy, you will be able to apply the analytical and writing skills that you learn in this class across many policy domains.

This course fulfills the Ford School Values & Ethics requirement. No scientific, technical, or ethics background is necessary.

COURSE REQUIREMENTS

1. Class preparation, attendance, and participation (20%, 10% per half-semester). This course is discussion-based. It demands that we each engage with complicated, controversial, and sometimes sensitive issues. We will devote most of class time to discussion. Active engagement with the reading material and thoughtful participation in discussions are crucial to the success of the course as well as to your own success in it**. I expect you to come to class having done the reading and ready to talk to and learn from each other.** Contributions to class should reveal your familiarity with the assigned readings, your willingness to analyze the issues and problems we are discussing, and your ability to constructively engage the comments of your classmates. **Quality and sincerity of engagement, not quantity of contributions, matters**. Your participation grade will be based on:

> a. Evidence of preparation—i.e. evidence that you have completed and reflected upon the readings prior to class
> b. Evidence of substantive engagement with the course material in the classroom through regular, informed contributions to discussion (small-group and/or full group) and in-class exercises, as well as attentive and respectful listening and responding to peers. Any formal debates and other structured in-class exercises are included in this part of your grade.

I recognize that some people find it difficult to speak in front of class. This is a skill you should work on because public speaking is important in many policy contexts. But you may also demonstrate your engagement through: attending office hours to discuss issues raised in the course; extra posts on the

Canvas discussion board relevant to course issues and materials, including your reflections on the readings; and sending Prof. Rohde news stories, articles, or other resources about relevant issues (i.e., encounters with "S&T values in the wild!") with brief but clearly articulated connections to our course content.

2. Discussion Questions (30%, 15% per half semester). To assist you in fulfilling (1), you will be responsible for posting **two** discussion questions to Canvas each week. (You have one free pass for the semester, to use at your discretion, beginning February 13, or you can do all of the dates and I'll drop the lowest grade.) Questions will be graded on a 0-4 scale, with the expectation that most posts receive a 2 or 3. **Posts are due at 11:30 am and should cover the readings for that date.** I will draw on them to frame discussion.

These questions should model good intellectual practice; that is, not just a one-sentence question, but a few sentences providing some important framing or context. This could include, for example, an explanation of why the question is important (the stakes), an elaboration on the nuances of the question, etc. Reference to specific language in the text(s) is encouraged and quotes are welcome. For material on the syllabus, you may simply cite author and page; for material beyond the syllabus, please include a full reference. Be sure to reflect on more than one reading for the day; i.e., demonstrate that you've read all of the assigned material.

Questions should represent two specific types according to the following classification (**identify the types in your post**):

1. Clarification/Comprehension (e.g., What does X mean?)
2. Analytical/Interpretive (e.g., How does X evidence relate to Y point?)
3. Synthetic/Evaluative (e.g., Are you convinced by the author's argument that X)
4. Connective/Comparative (e.g. How does X's argument compare to Y's we read last week?)
5. Provocative/Argumentative (e.g., Doesn't evidence X undermine author's point Y?!)
6. Applied/Extended (e.g. What light does X point shed upon current problem Y?) If you choose this question, be sure to indicate *why* or *how* the comparison is relevant. I.e., don't use this as a mindless invitation to extend an analysis across policy problems.

Points	4 (96)	3 (93)	2 (85)	1 (75)	0
Criteria	Evidence of exceptional effort and insight.	Demonstrates careful effort and serious thought.	Generally good. But lack of specificity, insight indicates more time was needed to complete the work.	Does not reflect all readings, shows little engagement or insight; clear that work was hurried or careless.	Assignment substantially incomplete or not turned in.

3. Writing Assignment: Memo or Op-Ed (10%)
This first writing assignment will help you practice writing about values and ethics in policy settings. You'll have the option of either a memo or op-ed format, and a max of 750 words.

4. Science and Technology Controversy Project

a. Topic Choice (P/F). Choose an ongoing controversy related to a <u>specific</u> science or technology policy issue that you want to focus on for the duration of this project. There many of possibilities to choose from, but it is very important that you choose a <u>current, specific controversy that is being actively discussed by stakeholders and/or public officials</u>. Controversies are likely to focus on one of two questions: 1) should an area of science or technology move forward (e.g., proposals for developments pertaining to synthetic biology, geoengineering, AI applications, natural resource development, etc.); or 2) should we regulate a particular area of science and technology, and how (e.g., greenhouse gases/fossil fuels, genetic modification, neuroenhancement technology). Choose a local, state, or national context in which <u>a live controversy</u> is taking place. Briefly answer the following questions: What are the main issues animating the controversy? What, if any, is the history of the controversy (briefly)? What is the evidence of a live, ongoing controversy? Who are the stakeholders involved? Identify at least three sets of stakeholders. Who are the decision-makers (the policymakers or other relevant officials) involved? List the key ones. Who are the experts involved? Identify expert organizations, disciplines, etc. whose expertise is valuable to solving the policy problem. Answer: Why is this controversy of interest to you in the context of this course?

b. Background Memo (20%). This document should provide an analytic explanation of the values and key players that animate your controversy, and should draw on the analytical tools we learn in our readings. <u>This memo should be no more than 1500 words, excluding notes</u>.

c. Controversy Recommendation (20%). For this paper, you may write either a memo or an op-ed that makes a recommendation for what policy approach(es) should be used to resolve your controversy. Your recommendation should reflect your knowledge about the values and assumptions that underlie the positions of different stakeholders, as well as your knowledge of the variety of tools available for making science and technology policy. Your recommendation will argue for why a particular approach— for example, a participatory technology assessment, a government advisory committee, an impact assessment, or some combination, etc.—is the most appropriate path forward. It will not argue for which stakeholder(s) should win the debate. This piece must also address counterarguments; why is the current approach, or other reasonable alternatives, insufficient or wrong-headed? <u>This paper should be no more than 1200 words, excluding notes.</u>

COURSE POLICIES
1. Attendance: Because this course depends heavily on participation, I expect you to make every effort to attend all sessions. However, for your own health and that of the rest of the class, please stay home if you are ill or quarantining. **Please notify me in advance** (or if advance warning isn't possible, as soon as you are able) if you will miss class; excused absences can be granted for things like illness, religious observances, as well as family and work emergencies. Normally, you do *not* need to provide me with documentation to justify your absence. Unexplained absences will negatively affect your grade, as will repeated tardiness.
2. Classroom policies:
   a. Please adhere to U-M's health policies: https://healthresponse.umich.edu/policies-guidance/ Masks are welcome in the classroom.
   b. Out of respect to the instructor and your fellow students, **put your cell phone away for the duration of class.** Violation of the technology policy will negatively affect your participation grade. Please refrain from going in and out of the room during class unless absolutely necessary as it is distracting to everyone.

3. Late assignments: Extensions require arrangements with the instructor <u>well in advance</u> of the due date. Late assignments will **lose five points for each 12 hour period, or fraction thereof**, that they are late. Late questions will receive a 0 unless an extension has been arranged.
4. Electronic devices: **Typically, laptops and other devices are NOT allowed in class.** While I recognize that this may cause consternation, such technologies negatively impact the character and quality of class discussion. Because discussion is so important to the intellectual task we face, the costs of laptops outweigh the benefits. I do **not** expect you to print out the readings, but I encourage you to take some notes to refer to in class.
5. Syllabus: Because many topics we cover are subjects of ongoing discussion, I may make occasional changes to the course readings over the semester. I will always notify you in advance of any changes.
6. Communications: Please use email, not the Canvas messaging feature, to communicate with me.
7. Flexibility and empathy: We may or may not still be in a global pandemic, but we are each dealing with all of the physical, mental, emotional, familial, etc. stresses the past few years have posed. I committed to understanding and flexibility. Should you have concerns about attendance, participation, assignments, etc., please reach out to me.

FORD SCHOOL AND UM POLICIES
Ford School Inclusivity Statement: Members of the Ford School community represent a rich variety of backgrounds and perspectives. We are committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:
- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value one another's opinions and communicate in a respectful manner
- keep confidential discussions that the community has of a personal (or professional) nature
- use this opportunity together to discuss ways in which we can create an inclusive environment in Ford classes and across the UM community

Ford School Public Health Protection Policy: In order to participate in any in-person aspects of this course--including meeting with other students to study or work on a team project--you must follow all the public health safety measures and policies put in place by the State of Michigan, Washtenaw County, the University of Michigan, and the Ford School. Up to date information on U-M policies can be found <u>here</u>. It is expected that you will protect and enhance the health of everyone in the Ford School community by staying home and following self-isolation guidelines if you are experiencing any symptoms of COVID-19.

Student Mental Health and Wellbeing: The University of Michigan is committed to advancing the mental health and wellbeing of its students. We acknowledge that a variety of issues, both those relating to the pandemic and other issues such as strained relationships, increased anxiety, alcohol/drug problems, and depression, can directly impact students' academic performance and overall wellbeing. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available.

You may access counselors and urgent services at <u>Counseling and Psychological Services</u> (CAPS) and/or <u>University Health Service</u> (UHS). Students may also use the Crisis Text Line (text '4UMICH' to

741741) to be connected to a trained crisis volunteer. You can find additional resources both on and off campus through the University Health Service and through CAPS.

Accommodations for Students with Disabilities: If you believe you need an accommodation for a disability, please reach out to U-M Services for Students with Disabilities (SSD) office to help determine appropriate academic accommodations and how to communicate about your accommodations with your professors. Any information you provide will be treated as private and confidential. **If you believe you require course modifications due to your accommodations, please communicate with your instructor by Jan. 18, or within ten days of receiving an accommodation.**

Academic Integrity: The Ford School academic community, like all communities, functions best when its members treat one another with honesty, fairness, respect, and trust. We hold all members of our community to high standards of scholarship and integrity. To accomplish its mission of providing an optimal educational environment and developing leaders of society, the Ford School promotes the assumption of personal responsibility and integrity and prohibits all forms of academic dishonesty, plagiarism and misconduct. Academic dishonesty may be understood as any action or attempted action that may result in creating an unfair academic advantage for oneself or an unfair academic advantage or disadvantage for any other member or members of the academic community. Plagiarism involves representing the words, ideas, or work of others as one's own in writing or presentations, and failing to give full and proper credit to the original source. Conduct, without regard to motive, that violates the academic integrity and ethical standards will result in serious consequences and disciplinary action. The Ford School's policy of academic integrity can be found in the MPP/MPA, BA, and PhD Program handbooks. Additional information regarding academic dishonesty, plagiarism and misconduct and their consequences is available at: http://www.rackham.umich.edu/current-students/policies/academic-policies/section11#112

Use of Technology*:* Students should follow instructions from their instructor as to acceptable use of technology in the classroom, including laptops, in each course. **All course materials (including slides, assignments, handouts, pre-recorded lectures or recordings of class) are to be considered confidential material and are not to be shared in full or part with anyone outside of the course participants.** Likewise, your own personal recording (audio or video) of your classes or office hour sessions is allowed only with the express written permission of your instructor. If you wish to post course materials or photographs/videos of classmates or your instructor to third-party sites (e.g. social media), you must first have informed consent. ***Without explicit permission from the instructor and in some cases your classmates, the public distribution or posting of any photos, audio/video recordings or pre-recordings from class, discussion section or office hours, even if you have permission to record, is not allowed and could be considered academic misconduct.***

Please review additional information and policies regarding academic expectations and resources at the Ford School of Public Policy at: https://intranet.fordschool.umich.edu/academic-expectations

COURSE SCHEDULE
All course readings are available on Canvas→Modules.

Wed., Jan. 4: Introduction and Overview

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I.   The Values in Science and Technology

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Mon., Jan. 9: Technology and Values I: The Politics of Artifacts *Discussion Questions*
Langdon Winner, "Do Artifacts Have Politics?" *Daedalus* 109.1 (1980): 121-36.
Jennifer Robertson, "Gendering Humanoid Robots: Robo-Sexism in Japan," *Body & Society* 16 (2010): 1-
      36. *Read: 1-13, 18-36.*

Wed., Jan. 11: Technology and Values II: The Artifacts of Politics
Ruha Benjamin, *Race after Technology: Abolitionist Tools for the New Jim Code* (Cambridge, UK: Polity,
      2019), Introduction.

Wed., Jan. 18: Science and Values I: Patronage *Discussion Questions*
Nadine Weidman, "The Hoffman Report in Historical Context," *History of the Human Sciences*, 35.5
      (2022): 3-5.
Joy Rohde, "Beyond Torture: Knowledge and Power at the Nexus of Social Science and National
      Security," *History of the Human Sciences* 35.5 (2022): 7-26.

Mon., Jan. 23: Ethics Interlude: Utility, Deontology, and Emerging Technology *Discussion Questions*
Michael C. Horowitz, "The Ethics and Morality of Robotic Warfare: Assessing the Debate over
      Autonomous Weapons," *Daedalus* 145.4 (Fall 2016), 25-36.
Human Rights Watch, "Heed the Call: A Moral and Legal Imperative to Ban Killer Robots," 2018, pp. 1-4,
      6-7, 19-30, 44-45.

Wed., Jan. 25: Science and Values II: Categories and Classification
Emily Martin, "The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical
      Male-Female Roles," *Signs* 16.3 (1991): 485-501.
Linda M. Hunt and Mary S. Megyesi, "The Ambiguous Meanings of the Racial/Ethnic Categories
      Routinely Used in Human Genetics Research," *Social Science and Medicine* 66 (2008): 349-361.

Mon., Jan. 30: Ethics Interlude: Utility, Equity, Dignity and Emerging Technology *Discussion
Questions*
Michael Sandel, *Justice: What's the Right Thing to Do?* (Farrar, Straus and Giroux, 2006), 140-66 (142-49
      optional).
Bridget Balch, "The Future of CRISPR is Now," Dec. 2, 2021, American Association of Medical Colleges
      AAMCNEWS, https://www.aamc.org/news-insights/future-crispr-now
Sandy Sufian and Rosemarie Garland-Thompson, "The Dark Side of CRISPR," *Scientific American*.
      February 16, 2021. https://www.scientificamerican.com/article/the-dark-side-of-
      crispr/?fbclid=IwAR2v3qXUOWGCUzTAoP3smzeUd_dy5q0AvrRHP23-B_sgcfCYFB1RbxCuxaw

Wed., Feb. 1: Policy Implications I: Algorithms and Social Welfare Policy
Virginia Eubanks, *Automating Inequality* (St. Martins, 2017), 84-126.
Halil Toros and Daniel Flaming, "Prioritizing Which Homeless People Get Housing Using Predictive
      Algorithms," *Economic Roundtable*.

Mon., Feb. 6: Paper 1 due at 2:30 pm
No class to accommodate paper writing!

Wed., Feb. 8: Policy Implications II: Biology, Culture, Citizenship *Discussion Questions*
Kim Tallbear, "Racial Science, Blood, and DNA," in *Native DNA: Tribal Belonging and the False Promise of
      Genetic Science* (Minneapolis: University of Minnesota Press, 2013), p. 31-66.

Nina Totenberg, "Supreme Court Considers Fate of Landmark Indian Adoption Law," NPR Morning Edition, Nov. 8 2022, https://www.npr.org/2022/11/08/1134668931/supreme-court-icwa

Part II: The Values of Expertise in Policy

Mon., Feb. 13: Who Counts as an Expert? *Discussion Questions*

Brian Wynne, "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science," in Irwin and Wynne, eds., *Misunderstanding Science?* (Cambridge University Press, 1996), pp. 19-46.

Steven Epstein, "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials," *Science, Technology, & Human Values* 20 (1995), 408-437.

Wed., Feb. 15: When Expertise Makes Policy Controversies Worse

Daniel Sarewitz, "How Science Makes Environmental Controversies Worse," *Environmental Science and Policy* 7 (2004): 385-403.

Mon., Feb. 20: Ethics Interlude: Epistemic Justice *Discussion Questions*

Gaile Pohlhaus, "Varieties of Epistemic Injustice," in *Routledge Handbook of Epistemic Injustice* (2017), selections.

Benjamin Pauli, *Flint Fights Back: Environmental Justice and Democracy in the Flint Water Crisis* (2019), chapter 5, selections.

David Roberts, "The North Carolina town that's scared of solar panels, revisited," *Vox*, December 18, 2015. http://www.vox.com/2015/12/18/10519644/north-carolina-solar-town

Wed., Feb. 22: The Politics of Uncertainty

Alan Irwin et al., "Regulatory Science—Towards a Sociological Framework," *Futures: The Journal of Forecasting and Planning* 29.1 (1997): 17-31. *Read pp 19-22, 28-30.*

David Demortain, "Regulatory Toxicology in Controversy," *Science, Technology, and Human Values* 38.6 (Nov. 2013), 727-48.

Mon., Mar. 6: Ethics Interlude: Human Rights as Environmental Advocacy *Discussion Questions*

Louis Henkin. *The Age of Rights* (New York: Columbia Univ. Press, 1990), p. 1-5.

Human Rights Watch, "The Human Right to Water: A Guide for First Nations Communities and Advocates," 2019, pp. 2-6.

Brian Palmer, "Is Water a Human Right?" onEarth blog, NRDC, March 3, 2016, https://www.nrdc.org/onearth/water-human-right

Kendra Okonski, "Is Water a Human Right?" *New Atlantis* 24 (Spring 2009), pp. 1-8.

Wed., Mar. 8: Citizen Science

Gwen Ottinger, "Misunderstanding Citizen Science: Hermeneutic Ignorance in U.S. Environmental Regulation," *Science as Culture* 31.4 (2022): 504-29.

Saturday, Mar. 11: Topic Choice due in CANVAS, 11:59 PM

Mon., Mar. 13: Rethinking Regulatory Expertise *Discussion Questions*

California Ocean Science Trust, *Putting the Pieces Together* (2014).

Part III: Rethinking Science and Technology Policy for Social Benefit

Wed., Mar. 15: Myths of Social Benefit
Daniel Sarewitz, *Frontiers of Illusion: Science, Technology, and the Politics of Progress* (Rutgers, 1996), 1-
     15.
Vannevar Bush, *Science: The Endless Frontier. A Report to the President* (US GPO, 1945), Ch. 6, esp. PDF
     pp. 3-8.

Mon., Mar. 20: Connecting Policy to Social Benefit **Discussion Questions**
Shobita Parthasarathy, "Innovation as a Force for Equity," *Issues in Science and Technology* (Winter
     2022), 30-36.
William E. Spriggs, "Stories to Work By," *Issues in Science and Technology* (Spring 2022), 47-52.
Alondra Nelson interview, *Issues in Science and Technology* (Fall 2021), 26-29.

Wed., Mar. 22: Traditional Forms of Public Participation in S&T Policy
Daniel J. Fiorino, "Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms,"
     Science, Technology, and Human Values 15.2 (Spring 1990): 226-243.
Nicholas Weller, "The Online Comment Period is a Fraudulent Cesspool," Slate.com, Feb. 23, 2018,
     https://slate.com/technology/2018/02/online-comments-are-a-terrible-way-to-involve-the-public-in-policymaking.html

Mon., Mar. 27: Rethinking Governance: From Expert to Citizen Deliberation **Discussion Questions**
Shobita Parthasarathy, "Lessons for CRISPR from the Missed Opportunities of Asilomar," *Ethics in
     Biology, Engineering, and Medicine* 6.3-4 (2015): 305-312.
Alesandro Blasimme, "Why Include the Public in Genome Editing Governance Deliberation?" *AMA
     Journal of Ethics* 21.12 (2019), E1065-70.
Sheila Jasanoff, J. Benjamin Hurlbut, and Krishanu Saha, "Democratic Governance of Human Germline
     Editing," *CRISPR Journal* 2.5 (2019), 266-71.

Wed., Mar. 29: Rethinking Governance: Participatory Technology Assessment
Claudia Chwalisz, "Deliberation and New Forms of Governance," in OECD, *Innovative Citizen
     Participation and Democratic Institutions: Catching the Deliberative Wave* (Paris: 2020), p. 19-
     28; you may skim 19-24, focus esp. 24-28.
Nicholas Weller et al., "Supporting Federal Decision Making through Participatory Technology
     Assessment," Day One Project, Dec. 2020.

Saturday, Apr. 1: Background memo due in CANVAS, 11:59 PM

Mon., Apr. 3: Rethinking Governance: Public Fora **Discussion Questions**
Leah Kaplan et al., "Cooling a Warming Planet? Public Forums on Climate Intervention Research,"
     Consortium for Science, Policy & Outcomes, Nov. 2019.

Wed., Apr. 5: Building Public-Values Capacity: Government Advisory Committees
David E. Winickoff and Mark B. Brown, "Time for a Government Advisory Committee on
     Geoengineering Research," *Issues in Science and Technology* 20 (2013): 79-85.

Mon., Apr. 10: Building Anticipatory Capacity **Discussion Questions**
Claire Galligan et al., *Cameras in the Classroom: Facial Recognition in Schools*. University of Michigan
     Technology Assessment Project, 2020. pp. 8-16, 23-27.

Osagie K. Obasogie, "Toward Race Impact Assessments," in Obasogie and Darnovsky, eds., *Beyond Bioethics: Toward a New Biopolitics*, 461-71.

Michael Levenson, "San Francisco Considers Allowing Use of Deadly Robots by Police," *New York Times* Nov. 30, 2022.

Christopher Coyne and Abigail Hall, "Killer Robots," *Responsible Statecraft*.org, Dec. 16, 2022.

Wed., Apr. 12: Debating the Future of S&T Policy
In class simulation

Mon., Apr. 17: Conclusions

April 21, 8pm: Governance Recommendation Due in CANVAS!