

BIOET 401Q: “Science, Ethics, Policy, and Law”

Fall 2023

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Tuesday & Thursday, 10:35-11:50 a.m.
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Course Description

This course explores the ethical, policy, and legal implications of science, and the implications of science for ethics, policy, and law. It provides an introduction to (and some critiques of) scientific norms and practice; an introduction to the theories and methods employed in ethical analysis; an overview of ethics for scientists; and introductions to law and policymaking with an emphasis on their nexus with science. In addition, the course explores the use of science in the courts; the role of scientists in policy debates (e.g., whether they should be advocates or “honest brokers”); “scientism” and its critiques (and rehabilitators); science communication and scientific hype; the roles and responsibilities of professional scientists and citizen scientists; science in regulatory and policy processes; policymaking in the face of scientific uncertainty; and what ethics, policy, and law might learn from recent developments in social and behavioral science.

The course will also explore a range of special topics (that vary according to the expertise of the instructor and the interests of the students). These topics are drawn from a variety of spheres: medicine and public health, food and nutrition science, neuroscience, computer and information science, climate science, and the social and behavioral sciences. Special topics in the Fall 2023 semester include the ethical and policy implications of “big data”; climate science, climate change denial, and ethical decision-making in the face of scientific uncertainty; the use of behavioral science and “nudging” in public policy; gun violence and gun control policy; the role of “citizen scientists” in contemporary scientific work, and the COVID-19 pandemic.

Note that all course materials (including this syllabus, assignment details, slides / notes, etc.) are available on a dedicated Github repository, at: <https://github.com/PrisonRodeo/SEPL-2023>. Throughout this syllabus, hot links appear in **Penn State Blue**.

Course Materials

Nearly all course readings comprise primary research documents (articles, book chapters, etc.). *There is no textbook for the course.* All readings will be organized topically and available on the course github repository, in the “Readings” folder.

Grading

Grading will be based on a total of 1000 points, divided as follows:

- Short response / critique papers: three, worth 150 points each.
- A final paper/project, worth 400 points.
- Class participation (in-person and virtual) over the course of the semester, worth 150 points.

Detailed descriptions of the response / critique papers and the final project will be announced in class, and will be available on the course github repository.

The course grading scale is as follows:

Grade	Points range
A	930-1000
A-	900-929
B+	870-899
B	830-869
B-	800-829
C+	770-799
C	730-769
C-	700-729
D+	670-699
D	600-669
F	<600

Obligatory Statement on Academic Integrity

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

In cases of any violation of academic integrity it is the policy of the Department of Political Science to follow procedures established by the College of the Liberal Arts. More information on academic integrity and procedures followed for violation can be found [here](#).

Obligatory Statement on Accommodations for Disabilities

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) website provides contact information for every Penn State campus, at:

<http://equity.psu.edu/sdr/disability-coordinator>.

For further information, please visit the Student Disability Resources website, at:

<http://equity.psu.edu/sdr/>.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines at:

<http://equity.psu.edu/sdr/guidelines>.

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If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

Obligatory Statement on Counseling and Psychological Services

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

Counseling and Psychological Services at University Park (CAPS)

(<http://studentaffairs.psu.edu/counseling/>): 814-863-0395

Counseling and Psychological Services at Commonwealth Campuses

(<http://senate.psu.edu/faculty/counseling-services-at-commonwealth-campuses/>)

Penn State Crisis Line (24 hours / 7 days/week): 877-229-6400. Crisis Text Line (24 hours / 7 days/week): Text LIONS to 741741.

Obligatory Statement on Educational Equity and Reporting Bias

Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff. Consistent with University Policy AD29, students who believe they have experienced or observed a hate crime, an act of intolerance, discrimination, or harassment that occurs at Penn State are urged to report these incidents as outlined on the University's Report Bias webpage (<http://equity.psu.edu/reportbias/>).

Non-Obligatory Statement on Generative AI, Large Language Models, etc.

You're undoubtedly aware of the existence of large language models (LLMs) – e.g., [ChatGPT](#) – and other artificial intelligence (AI) tools for language / image creation. LLMs are currently creating a sometimes-depressing, sometimes-hilarious panic among faculty in legacy academic disciplines and programs. Most of that panic revolves around the use of LLMs to “cheat,” in the traditional sense: to create work that deceptively gives the impression that the student knows something they do not. Beyond its intrinsically duplicitous nature, such use in a conventional classroom setting gives rise to concerns about equity and (potentially) devalues the experience / credential for other class members.

The other side of the LLM equation is that they are powerful tools for augmenting learning and creating new knowledge. Experience suggests that, in line with other technological advances (the printing press, personal computers, search engines, etc.), it is wiser to adapt to LLMs than to attempt to limit or ban their use. Accordingly, enrollees in BIOET 401Q are welcome to use generative AI tools, such as ChatGPT, to assist them with their work in the course. In doing so, it is important to remember that such AI tools are capable of making errors, and that it is each student's responsibility to verify the information they receive from the such a tool. In addition, any information obtained from a generative AI source must be noted/cited in the student's work, just as they would cite any other source. See the discussion of *Academic Integrity*, above, for information on proper citation practices.

Course Schedule

Part I: Introduction to Science, Ethics, Policy, Law, and their Intersections

August 22: Welcome and Course Introduction.

August 24: What Do We Mean By “Science”?

Readings:

- Sokal, Alan. 2014. “What is Science and Why Should We Care, Part I.” *Scientia Salon* Blog, March 26, 2014.
<https://scientiasalon.wordpress.com/2014/03/26/what-is-science-and-why-should-we-care-part-i/>.
- Sokal, Alan. 2014. “What is Science and Why Should We Care, Part II.” *Scientia Salon* Blog, March 27, 2014.
<https://scientiasalon.wordpress.com/2014/03/27/what-is-science-and-why-should-we-care-part-ii/>.
- Sokal, Alan. 2014. “What is Science and Why Should We Care, Part III.” *Scientia Salon* Blog, March 28, 2014.
<https://scientiasalon.wordpress.com/2014/03/28/what-is-science-and-why-should-we-care-part-iii/>.

August 29-31: Science: Practices and Critiques

Readings:

- Merton, Robert. 1973 (1942). “The Normative Structure of Science.” In Merton, Robert K., *The Sociology of Science*. Chicago: University of Chicago Press.
- Becker, Kate. 2015. “Does Science Need Falsifiability?” *NOVA Newsletter*, February 11, 2015. <https://www.pbs.org/wgbh/nova/article/falsifiability/>.
- Thacker, Paul D., and Jon Tennant. 2019. “Why We Shouldn’t Take Peer Review as the ‘Gold Standard’.” *The Washington Post*, August 1, 2019.
- Ioannidis, John P.A. 2005. “Why Most Published Research Findings Are False.” *PLoS Medicine* 2:e124.
- Rosenbaum, Lisa, 2017. “The March of Science – The True Story.” *New England Journal of Medicine* 377(2):188-191.

September 5-7: Introduction to Ethics: Theories and Methods

Readings:

- Excerpts:
 - Aristotle, *The Nichomachean Ethics*.
 - Kant, *Foundations of the Metaphysics of Morals*.
 - Mill, *Utilitarianism*.
- Rachels, James. 1993. *The Elements of Moral Philosophy*, 3rd Ed. New York: McGraw-Hill. Chapter 12: “Virtue Ethics.”
- Sandel, Michael J. 2010. *Justice: What’s the Right Thing to Do?* New York: Farrar, Straus and Giroux. pp. 103-116.
- Pojman, Louis. 2005. *How Should We Live? An Introduction to Ethics*. New York: Thompson. pp. 1-7; 12-19. (For an alternative, more historically accurate take on Pojman’s Kitty Genovese example, see [here](#).)

September 12-14: Toward An Ethics of Science

Readings:

- Office of the Secretary, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. 1979. *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research* (“The Belmont Report”). U.S. Department of Health, Education, and Welfare. April 18, 1979.
- Kitchener, Karen Strohm, and Richard F. Kitchener. 2009. “Social Science Research Ethics: Historical and Philosophical Issues.” In Donna M. Mertens and Pauline E. Ginsberg, eds. *The Handbook of Social Research Ethics*. New York: Sage.
- Tuana, Nancy. 2010. “Leading With Ethics, Aiming For Policy: New Opportunities for Philosophy of Science.” *Synthese* 177:471-492.
- Weinbaum, Cortney, Eric Landree, Marjory S. Blumenthal, Tepring Piquado, and Carlos Ignacio Gutierrez. 2019. *Ethics in Scientific Research: An Examination of Ethical Principles and Emerging Topics*. Santa Monica, CA: The RAND Corporation. Chapters 1 and 2.

September 19-21: Scientism

Readings:

- Gray, J.W. 2013. “Eleven Types of Scientism.” *Ethical Realism Blog*, August 20, 2013. <https://ethicalrealism.wordpress.com/2013/08/20/eleven-types-of-scientism/>.
- Peels, Rik. 2018. “A Conceptual Map of Scientism.” In de Ridder, Jeroen, Rik Peels, and Rene van Woudenberg, eds. *Scientism: Prospects and Problems*. New York: Oxford University Press.
- Hughes, Austin L. 2012. “The Folly of Scientism.” *The New Atlantis* 37:33-50.
- Hanlon, Aaron. 2019. “How Blind Reverence for Science Obscures Real Problems.” *The Washington Post - Outlook*, January 28, 2019.
- Winegard, Bo, and Ben Winegard. 2019. “In Defense of Scientism.” *Quillette Blog*, April 6, 2019. <https://quillette.com/2019/04/06/in-defense-of-scientism/>.

September 26-28: Science and Law: Fundamentals

Readings:

- *Katz v. U.S.* 389 U.S. 347 (1961) (majority opinion).
- Feldman, Robin. 2009. *The Role of Science in Law*. New York: Oxford University Press. Chapter 5: “The Nature of Law.”
- *Daubert v. Merrell Dow Pharmaceuticals* 509 U.S. 579 (1993).
- Jasanoff, Sheila. 2012. *Science and Public Reason*. New York: Routledge. Chapter 10: “What Judges Should Know About the Sociology of Science.”

October 3-5: Science in the Policy Process

Readings:

- Thatcher, Mark. 2001. “Issue Networks: Iron Triangles, Subgovernments, and Policy Communities.” In Smelser, Neil J., and Paul B. Baltes, eds. *International Encyclopedia of the Social & Behavioral Sciences*. Oxford: Pergamon.
- King, Anthony. 2017. “Science, Politics and Policymaking.” *EMBO Reports* 17:1510-12.

- Jasanoff, Sheila. 1990. *The Fifth Branch: Science Advisors as Policymakers*. Cambridge, MA: Harvard University Press. Chapter One: “Rationalizing Politics.”
- Pielke, Roger A., Jr. 2007. *The Honest Broker: Making Sense of Science in Policy and Politics*. New York: Cambridge University Press. Chapters 1-4.
- Fischer, Frank. 2009. *Democracy and Expertise: Reorienting Policy Inquiry*. New York: Oxford University Press. Chapter One: “Between Technical Knowledge and Public Responsibility: Professional Expertise in Critical Perspective.”

October 10: Science Education, Communication, and Public Trust

Readings:

- Appiah, Bernard, and Juan Casasbuenas. 2019. “How to Report Scientific Findings.” *SciDevNet*, May 31, 2019. <https://www.scidev.net/global/journalism/script-practical-guide/how-to-report-scientific-findings-1x.html>
- Berkman, Michael B., and Eric Plutzer. 2011. “Defeating Creationism in the Courtroom, But Not in the Classroom.” *Science* 331:404-405.
- Ioannidis, John P.A. 2005. “How to Make More Published Research True.” *PLoS Medicine* 11(10):e1001747.

October 12: Social Science on Ethics, Policy, and Law

Readings:

- de Muijnck, Wim. 2011. “Normative Authority for Empirical Science.” *Philosophical Explorations* 14: 263-75.
- FitzPatrick, William. 2018. “Cognitive Science and Moral Philosophy: Challenging Scientistic Overreach.” In de Ridder, Jeroen, Rik Peels, and Rene van Woudenberg, eds. *Scientism: Prospects and Problems*. New York: Oxford University Press.

Part II: Selected Topics

October 17-19: Climate Science, Denial, and Doubt

Readings:

- Mann, Michael C. 2012. *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines*. New York: Columbia University Press. Chapters 4-5.

- Mann v. CEI / *National Review*:
 - Jarvis, Brooke. 2012. “Is It Time for Climate Scientists to Get Political?” *The Atlantic*: November 6, 2012.2
 - Cama, Timothy. 2016. “Court: Climate Scientist Can Sue Conservative Writers Over Alleged Defamation.” *The Hill*, December 22, 2016.
 - Hurley, Lawrence. 2019. “U.S. Supreme Court Lets Climate Scientist’s Defamation Claim Proceed.” Reuters: November 25, 2019.
- McKie, Robin. 2019. “Climate Change Deniers’ New Battle Front Attacked.” *The Guardian*: November 9, 2019.
- Markowitz, Ezra M., Marco Grasso, and Dale Jamieson. 2015. “Climate Ethics at a Multi-disciplinary Crossroads: Four Directions for Future Scholarship.” *Climatic Change* 130:465-472.
- Temple, James. 2020. “Climate Change Means the U.S. Must Start Building Big Things Again.” *MIT Technology Review*: January 15, 2020.
- OPTIONAL:
 - Mann, Michael E., Raymond S. Bradley, and Malcolm K. Hughes. 1998. “Global-Scale Temperature Patterns and Climate Forcing Over The Past Six Centuries.” *Nature* 392:779-787. (“MBH98”)
 - Oreskes, Naomi, and Erik M. Conway. 2013. “The Collapse of Western Civilization: A View from the Future.” *Dædalus: the Journal of the American Academy of Arts & Sciences* 142(1):40-58.

October 24-26: Gun Violence and Gun Control

Readings:

- Rose, Veronica. 2010. “Summary of *McDonald v. City of Chicago*, 561 U.S. 742 (2010).” Report to the General Assembly of the State of Connecticut. <https://www.cga.ct.gov/2010/rpt/2010-R-0314.htm>. (Full opinions are [here](#).)
- Howe, Amy. 2022. “In 6-3 Ruling, Court Strikes Down New York’s Concealed-Carry Law.” SCOTUSBlog, June 23, 2022. (Analyzing *New York State Rifle & Pistol Association v. Bruen*)
- Mozaffarian, Dariush, David Hemenway, and David S. Ludwig. 2013. “Curbing Gun Violence: Lessons From Public Health Successes.” *Journal of the American Medical Association* 309(6):551-552.

- Santaella-Tenorio, Julian, Magdalena Cerdá, Andrés Villaveces, and Sandro Galea 2016. “What Do We Know About the Association Between Firearm Legislation and Firearm-Related Injuries?” *Epidemiologic Reviews* 38:140-157. (Popular summary [here](#).)
- RAND Corporation. 2018. “What Science Tells Us About the Effects of Gun Policies.” Available at <https://www.rand.org/research/gun-policy/key-findings/what-science-tells-us-about-the-effects-of-gun-policies.html>.
- Rostron, Allen. 2018. “The Dickey Amendment on Federal Funding for Research on Gun Violence: A Legal Dissection.” *American Journal of Public Health* 108(7):865-867.

October 31 - November 2: The Ethics of “Nudging”

Readings:

- Sugden, Robert. 2009. “On Nudging: A Review of *Nudge: Improving Decisions About Health, Wealth, and Happiness*.” *International Journal of the Economics of Business* 16(3):365-373.
- Blumenthal-Barby, J. S., and Hadley Burroughs. 2012. “Seeking Better Health Care Outcomes: The Ethics of Using the ‘Nudge’.” *The American Journal of Bioethics* 12(2):1-10.
- Eyal, Nir. 2014. “Nudging by Shaming, Shaming by Nudging.” *International Journal of Health Policy Management* 3(2), 53-56.
- Sustain, Cass R. 2015. “The Ethics of Nudging.” *Yale Journal on Regulation* 32:413-450.
- OPTIONAL: Oreopoulos, Philip, and Uros Petronijevic. 2019. “[The Remarkable Unresponsiveness of College Students to Nudging And What We Can Learn from It](#).” NBER Working Paper No. 26059; July 2019.

November 7-9: Generative Artificial Intelligence

Readings:

- For background, if you want / need to, read one or more of:
 - Hughes, Owen. 2023. “[Generative AI Defined: How it Works, Benefits and Dangers](#).” *TechRepublic*, August 7, 2023.
 - McKinsey and Company. 2023. “[What Is Generative AI?](#)” *McKinsey & Company Featured Insights*, January 19, 2023.
 - Ray, Tiernan. 2023. “[Generative AI Will Far Surpass What ChatGPT Can Do](#).” *ZDNet*, October 3, 2023.

- The White House. 2023. *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence*. Issued October 30, 2023. (Long, detailed, and very recent; maybe give it a skim.)
- Ethics:
 - Jobin, Anna, Marcello Ienca, and Effy Vayena. 2019. “The Global Landscape of AI Ethics Guidelines.” *Nature Machine Intelligence* 1:389-399.
 - Munger, Kevin. 2023. “I Strongly Feel That This Is An Insult to Life Itself.” *Never Met A Science*, January 25, 2023. ([link](#))
 - Spitale, Giovanni, Nikola Biller-Andorno, and Federico Germani 2023. “AI Model GPT-3 (Dis)informs Us Better Than Humans.” *Science Advances* 9:eadh1850.
- Policy:
 - Google’s [Generative AI Prohibited Use Policy](https://policies.google.com/terms/generative-ai/use-policy) (available at <https://policies.google.com/terms/generative-ai/use-policy>)
 - Lorenz, Phillippe, Karine Perset, and Jamie Berryhill. 2023. *Initial Policy Considerations For Generative Artificial Intelligence*. OECD Library: OECD Artificial Intelligence Papers. <https://doi.org/10.1787/fae2d1e6-en> Chapters 1 and 2.
 - Federal Trade Commission. 2023. “FTC Action Stops Business Opportunity Scheme That Promised Its AI-Boosted Tools Would Power High Earnings Through Online Stores.” *Federal Trade Commission* website, August 22, 2023.

November 14-16: Big Data: Privacy, Property, and Politics

Readings:

- The “End of Theory”:
 - Anderson, Christopher. 2008. “The End of Theory: The Data Deluge Makes the Scientific Method Obsolete”. *Wired*: March 23, 2008.
 - Graham, Mark. 2012. “Big Data and the End of Theory?” *The Guardian*: March 9, 2012.
- Lee, Nicol Turner, Paul Resnick, and Genie Barton. 2019. “Algorithmic Bias Detection and Mitigation: Best Practices and Policies to Reduce Consumer Harms.” *The Brookings Institution*: May 22, 2019.
- Tene, Omer, and Jules Polonetsky. 2012. “Privacy in the Age of Big Data: A Time for Big Decisions.” *Stanford Law Review Online: Perspectives*, February 2, 2012. (Note that this is a summary version of Tene and Polonetsky’s “Big Data for All: Privacy and User Control in the Age of Analytics,” *Northwestern Journal of Technology & Intellectual Property* 11:239-273.)

- boyd, dana, and Kate Crawford. 2012. “Critical Questions for Big Data.” *Information, Communication & Society* 15:662-79.

November 21-23: No Class – Thanksgiving Break

November 28-30: Forensic Evidence in Court

Readings:

- Aronson, Jay D., and Simon A. Cole. 2009. “Science and the Death Penalty: DNA, Innocence, and the Debate Over Capital Punishment in the United States.” *Law & Social Inquiry* 34:603-633.
- Greely, Henry T. 2015. “Neuroscience, Mindreading, and the Courts: The Example of Pain.” *Journal of Health Care Law and Policy* 18:171-206.
- Morse, Stephen J. 2018. “Neuroscience Evidence in Forensic Contexts: Ethical Concerns.” In E. E. H. Griffith (Ed.), *Ethics Challenges in Forensic Psychiatry and Psychology Practice*. New York: Columbia University Press, pp. 132–157.
- National Institutes of Justice. 2022. “The Slow but Steady March Towards a More Reliable Forensic Science.” NIJ report, December 7, 2022.
- Stern, Mark Joseph. 2014. “Forensic Science Isn’t Science.” *Slate*, June 11, 2014.

December 5-7: COVID-19

Readings:

- Of historical interest:
 - “The Hard Choices COVID Policymakers Face.” *The Economist*. April 4, 2020.
 - Glasziou, Paul, and Chris Del Mar. 2020. “Should Everyone Be Wearing Face Masks? It’s Complicated.” *The Conversation*, April 8, 2020.
 - Heimstadt, Maximilian. 2020. “Between Fast Science and Fake News: Preprint Servers Are Political.” *LSE Impact Blog*, April 3, 2020.
 - Larson, Heidi J. 2020. “Blocking Information on COVID-19 Can Fuel the Spread of Misinformation.” *Nature* 580:306.
 - Steinberg, Irving. 2020. “Coronavirus Research Done Too Fast is Testing Publishing Safeguards, Bad Science is Getting Through.” *The Conversation*, April 9, 2020.

- Masks:
 - Jefferson, Tom, Liz Dooley, Eliana Ferroni, Lubna A. Al-Ansary, Mieke L. van Driel, Ghada A. Bawazeer, Mark A. Jones, Tammy C. Hoffmann, Justin Clark, Elaine M. Beller, Paul P. Glasziou, and John M. Conly. 2023. “Physical Interventions to Interrupt or Reduce the Spread of Respiratory Viruses.” *Cochrane Database of Systematic Reviews* 2023 1:CD006207.
 - Piper, Kelsey. 2023. “The New Scientific Review on Masks and COVID Isn’t What You Think.” *Vox Future Perfect*, February 22, 2023.
- Emanuel, Ezekiel J., Ross E.G. Upshur, and Maxwell J. Smith. 2022. What COVID Has Taught the World About Ethics. *New England Journal of Medicine* 387:1542-1545.
- Wallace, Jacob, Paul Goldsmith-Pinkham, and Jason L. Schwartz. 2022. “Excess Death Rates for Republicans and Democrats During the COVID-19 Pandemic.” NBER Working Paper #30152.

December 11: Policy briefs – Final drafts DUE.