# **ENVS 450/550: Science in the Policy Process**

Term: Spring, 2017; Crn: 23677; 4 cr; WP2

Professor: Mark Neff, Ph.D. Mark.Neff@wwu.edu 360.650.2896

**Office hours**: Monday, Friday 9:30-11:00, and by appointment.; and by appointment. I will leave a note on my office door if another meeting prevents me from being able to be present for office hours. Please feel free to contact me for other meeting times if you have regular conflicts.

Office: Arntzen Hall 205 Classroom: BI 212

Meeting time: TR 12:00-1:50 pm

# **Course Description**

This course uses theory and case studies to explore the roles of science in environmental policy and regulatory processes, paying particular attention to controversies. Examples will come primarily from the United States government, but may draw from international cases for comparative purposes. Topics will include a mixture of current events and historical case studies.

This is an upper-division seminar; expect 75-100 pages of (occasionally difficult) readings per class meeting. You are expected to come to class having read the assigned work and prepared to discuss. I do not expect that you will understand everything the first time you read it, but I do expect that you will come with notes and questions such that you can continue to learn and explore new ideas in class.

# **Learning Objectives**

My goals in this course are to help you to:

- Establish familiarity with the major institutions involved in US environmental policy making (Contributes to ENVPOL objective #1);
- Recognize the stages in the policy process when scientific information is and can optimally be utilized, as well the stages at which it is less influential (Contributes to ENVPOL objective #1 and ENVS #4);
- Describe the stages in the policy process at which politics and values are and should be influential, as well as the stages where they should take a back seat to technical deliberation (Contributes to ENVPOL objective #1);
- Articulate the forms and sources of disagreement in environmental controversies (Contributes to ENVS objective #3;
- Recognize and articulate the differences between politicized science and scientized politics;
- Understand how you as an individual can interact with and influence policy processes;
- Build a skillset to empower yourself as a citizen in a polarized democracy;
- And hone your communication and reasoning skills through writing and essay exams. These tasks will require you to understand technical issues, identify points of view, make inferences, and anticipate the consequences of proposed actions (Contributes to ENVS objectives #3 & 6 and ENVPOL #s2, 3, & 4).

## **Required Books**

Denworth, Lydia. *Toxic Truth: A Scientist, a Doctor, and the Battle over Lead*. Boston: Beacon Press, 2008.

Fischer, F. (2000). *Citizens, experts, and the environment: the politics of local knowledge*. Durham, NC: Duke University Press. ISBN 978-0-8223-2628-1

Pielke Jr, R. A. (2007). *The Honest Broker: Making Sense of Science in Policy and Politics*. Cambridge: Cambridge University Press. ISBN 978-0521694810

	Date	Topic					
1	Tu Mar 28 <sup>th</sup>	Course introduction, writing tips, first assignment					
2	Th Mar 30 <sup>th</sup>	What is the policy process?  Textbooks present a linear (or perhaps circular) cartoon depictions of the "policy process."  That makes for a rational explanation of the world, but the policy process is not rational, linear, or circular. It is a jumble, a dynamic mess. These classic articles will provide us with the requisite basic vocabulary for discussing and understanding what policy problems are and why they are unbelievably difficult to define, let alone "solve."					
		This first reading is a beast, but it is full of great information. Be systematic about taking notes and seeking out the big picture insights.					
		<ul> <li>March, James G. "Theories of Choice and Making Decisions." Society 20, no. 1 (Novembe 1, 1982): 29–39. doi:10.1007/BF02694989.</li> <li>Lindblom, Charles E. "The Science of Muddling Through." Public Administration Review 19 (1959): 79–88.</li> </ul>					
		Acknowledging the complexity of policy processes is not the same as throwing up our hands to say that we cannot learn anything about it or improve it. See the following <b>optional</b> text for a nuanced presentation of government structure and function as it relates to various policy processes:					
		Birkland, Thomas A. An Introduction to the Policy Process: Theories, Concepts, and Models of Public Policy Making. Fourth Edition. New York: Routledge, 2016.					
3	Tu Apr 4 <sup>th</sup>	*Due: warm-up essay A first look: Four idealized roles of science in policy. Pielke <u>The Honest Broker</u> , pp 1-75					
		This book is great. Take the opportunity to think through when and how you might expect and hope that science influences policy. Scientists are experts, but how can we best take advantage of scientific expertise? When and where in the policy process? What about the collective wisdom of democracy? These ideas are first presented here, and are most accessible here. We will continue to explore and consider them throughout the term, so take advantage of this early exposure.					
4	Th Apr 6th	A first look: Pielke <u>The Honest Broker</u> , pp 76-end Note: the dates to the left are in bold font from here through class 18. These are the dates for which students will write their reading reflection and integration essays.					
5	Tu Apr 11 <sup>th</sup>	Science when the outcome matters It is comforting to assume that we can base our decisions on scientific certainties. That is rarely possible, in part because there is a feedback between science and politics that makes scientific certainty elusive when it most matters.  As you read this first item, be aware that the authors present <i>myths</i> of science that they then debunk. Do not misread their description of the myths as being their actual argument.  • Collingridge, D., & Reeve, C. (1986). Science Speaks to Power: The Role of Experts in Policy Making. New York: St. Martin's Press. Chapters 1-4  And here is a case of that feedback in action: Salt and its influence on blood pressure.  • Taubes, Gary. "BIOMEDICINE:The (Political) Science of Salt." Science 281, no. 5379 (1998): 898–907.  Make sure you remember the key ideas of this one, which you read for ENVS 305:  • Sarewitz, D. (2004). How science makes environmental controversies worse.  Environmental Science and Policy, 7(5), 385–403.)					
6	Th Apr	Kicking the tires a bit: Are there other forms or sources of knowledge that we should heed?					

13<sup>th</sup>

Science (or, better, the sciences) represent(s) a powerful set of tools for understanding the world. We take for granted that they produce not just solid factual information, but the factual information that we need to address the world's problems. When that information is unused, it is all too easy to assume that the failings are on the part of an under-informed public or political class. The story is more complicated and interesting than that.

This piece details the reasons why different publics might not take up and act upon scientific knowledge that is specifically developed to inform their decision making. Hint: it is not that the public is not "smart" enough to understand

• Wynne, Brian. "Misunderstood Misunderstandings: Social Identities and Public Uptake of Science." In *Misunderstanding Science?: The Public Reconstruction of Science and Technology*, edited by A. Irwin and B. Wynne. Cambridge: Cambridge University Press, 1996.

This reading is a late chapter in a long book. The first 300 pages lay out a series of case studies of situations in which (mostly) well-intentioned government programs based upon rational, scientific approaches to management (what he refers to as high-modernist approaches), completely miss the mark, leading to disaster of one sort or another. This chapter explores the types of knowledge that are non-technical but that are absolutely critical.

• Scott, J. C. (1998). Thin Simplifications and Practical Knowledge: Metis. In *Seeing like a state: how certain schemes to improve the human condition have failed* (pp. 309–341). New Haven [Conn.]: Yale University Press.

# 7 Tu Apr

What does statistical significance mean? Probably not what you think. Probably not what many authors of scientific articles think. Oh, and by the way, most published findings are false.

These two are short, but will take significant time to fully understand. Read them, think about them, then read them again.

• Nuzzo, R. (2014). Scientific method: Statistical errors. *Nature*, *506*(7487), 150–152. http://doi.org/10.1038/506150a

It's okay if you don't fully understand this next one. But it's published, so it must be correct. Right?

• Ioannidis, J. P. A. (2005). Why Most Published Research Findings are False. *PLoS Medicine*, *2*(8), 696–701.

Problems with reproducibility of scientific findings have been in the mainstream press of late, leading to a bit of handwringing among scientists and other observers.

- Aschwanden, Christie. "Science Isn't Broken." *FiveThirtyEight*, August 19, 2015. http://fivethirtyeight.com/features/science-isnt-broken/.
- Yong, Ed. "The Inevitable Evolution of Bad Science." The Atlantic, 9:27 AM ET.
   <a href="http://www.theatlantic.com/science/archive/2016/09/the-inevitable-evolution-of-bad-science/500609/">http://www.theatlantic.com/science/archive/2016/09/the-inevitable-evolution-of-bad-science/500609/</a>

8	Th Apr 20 <sup>th</sup>	Where the rubber meets the road: Toxicology in the legal system  How do we know when a chemical causes adverse health outcomes? What about that chemical when people are exposed environmentally, at vastly differing concentrations? What about when we consider that not all people are likely to be equally vulnerable? After all, some of us are babies consuming breast milk exclusively, some of us have multiple exposures to the same or different chemicals, and some of us have other pre-existing conditions.  • (refresh your memory from 305) Brown, P., Kroll-Smith, S., & Gunter, V. J. (2000). Knowledge, citizens, and organizations. In <i>Illness and the environment: A reader in contested medicine</i> (pp. 9–25).  • Krimsky, S. (2000). Environmental Endocrine Hypothesis and Public Policy. In J. S. Kroll-Smith, P. Brown, & V. J. Gunter (Eds.), <i>Illness and the environment: a reader in contested medicine</i> (pp. 95–107). New York: New York University Press.  • Johnson, G. (2015, March 23). When Science Is Lost in a Legal Maze. <i>The New York Times</i> . Retrieved from <a href="http://www.nytimes.com/2015/03/24/science/when-science-is-lost-in-a-legal-maze.html">http://www.nytimes.com/2015/03/24/science/when-science-is-lost-in-a-legal-maze.html</a> • Berger, M. A. "What Has a Decade of Daubert Wrought?" <i>American Journal of Public Health</i> Supp 1, no. 95 (2005): S59–65.
9	Tu Apr 25 <sup>th</sup>	Denworth, Lydia. <i>Toxic Truth: A Scientist, a Doctor, and the Battle over Lead</i> . Boston: Beacon Press, 2008.  • Intro, Prelude, ch 1 and 2
		• Intro, Prelude, chs 1-3
10	Th Apr 27 <sup>th</sup>	• Denworth <del>3,4-4</del> ,5
11	Tu May 2 <sup>nd</sup>	• Denworth <del>5,6</del> 6-8
12	Th May 4 <sup>th</sup>	<ul> <li>Denworth 7,8 Our contemporary battle with lead: Flint         <ul> <li>Barry-Jester, Anna Maria. "What Went Wrong In Flint." FiveThirtyEight, January 26, 2016. <a href="http://fivethirtyeight.com/features/what-went-wrong-in-flint-water-crisis-michigan/">http://fivethirtyeight.com/features/what-went-wrong-in-flint-water-crisis-michigan/</a> </li> </ul> </li> <li>Martin, Rebekah, Siddhartha Roy, and William Rhoads. "We Helped Uncover a Public Health Crisis in Flint, but Learned There Are Costs to Doing Good Science." The Conversation. Accessed April 28, 2016. <a href="http://theconversation.com/we-helped-uncover-a-public-health-crisis-in-flint-but-learned-there-are-costs-to-doing-good-science-54227">http://theconversation.com/we-helped-uncover-a-public-health-crisis-in-flint-but-learned-there-are-costs-to-doing-good-science-54227</a> </li> </ul>
13	Tu May 9 <sup>th</sup> Class cancelled	Our contemporary battle with lead: Flint  - Barry-Jester, Anna Maria. "What Went Wrong In Flint." FiveThirtyEight, January 26, 2016. http://fivethirtyeight.com/features/what-went-wrong-in-flint-water-crisis-michigan/  - Martin, Rebekah, Siddhartha Roy, and William Rhoads. "We Helped Uncover a Public
		- Paul cin, Rebekun, biddinar tha Roy, and william knowds. We fresped blooves as done

		Health Crisis in Flint, but Learned There Are Costs to Doing Good Science." The Conversation. Accessed April 28, 2016. http://theconversation.com/we-helped-uncover-a-public-health-crisis-in-flint-but-learned-there-are-costs-to-doing-good-science-54227
14	Th May 11 <sup>th</sup>	Science in regulation Jasanoff, Sheila. "Ch 7: Advisers as Adversaries." In <i>The Fifth Branch: Science Advisers as Policymakers</i> , 123–51. Cambridge: Harvard University Press, 1990.
		Aviv, Rachel. "A Valuable Reputation." <i>The New Yorker</i> , February 10, 2014. <a href="http://www.newyorker.com/reporting/2014/02/10/140210fa fact aviv?mbid=social tablet_e">http://www.newyorker.com/reporting/2014/02/10/140210fa fact aviv?mbid=social tablet_e</a>
		Skim the following to learn that it is not just the political Right that harasses scientists with inconvenient findings:
		Bryce, Robert. "WikiLeaks: John Podesta Silenced Climate-Change Dissent   National Review." Accessed October 27, 2016. <a href="http://www.nationalreview.com/article/441438/wikileaks-john-podesta-silenced-climate-change-dissent">http://www.nationalreview.com/article/441438/wikileaks-john-podesta-silenced-climate-change-dissent</a> .
		Lutcavage, Molly. "Environmental Bullies: How Conservation Ideologues Attack Scientists Who Don't Agree With Them." <i>Medium</i> , March 8, 2016.
		https://medium.com/@Tuna/environmental-bullies-how-conservation-ideologues-attack-scientists-who-don-t-agree-with-them-8b48e57385bd
15	Tu May 16 <sup>th</sup>	Citizens, Experts and the Environment We live in a democracy, which means we vote on representatives to make decisions on our behalf. But, we also live in a world full of technical questions, and thus rely heavily on technical experts to make (or provide advice for) decisions. The democratic and the technocratic aspects of our government exist in a tension, especially as we confront environmental problems, which inescapably involve value-based and technical components. Frank Fischer has been exploring these and related tensions for a long and productive career. And he has some thoughts worth considering.
		Fischer is aware of all the shortcomings we have been discussing, and proposes new ways of thinking of science and policy to improve the situation.
		Fischer part I: Citizens and Experts in the Risk Society
16	Th May 18 <sup>th</sup>	Citizens, Experts and the Environment, cont'd Fischer part II: Environmental Politics in the Public Sphere
17	Tu May 23 <sup>rd</sup>	Citizens, Experts and the Environment, cont'd Fischer part III: Local Knowledge and Participatory Inquiry
18	Th May 25 <sup>th</sup>	Citizens, Experts and the Environment, cont'd Fischer part IV: Discursive Institutions and Policy Epistemics
19	Tu May 30 <sup>th</sup>	Getting the most out of science AND democracy Scientific understanding is inherently partial, and the knowledge we do have is that which a scientific elite has decided to pursue. How do we make the most of this situation?

		<ul> <li>Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." Feminist Studies 14, no. 3 (1988): 575.</li> <li>Guston, D. H. (2004). Forget Politicizing Science. Let's Democratize Science! Issues in Science and Technology, 21(1), 25–28.</li> <li>Jasanoff, S. (2007). Technologies of humility. Nature, 450(7166), 33. <a href="http://doi.org/10.1038/450033a">http://doi.org/10.1038/450033a</a></li> <li>Sarewitz, D. (2009). World view: A tale of two sciences. Nature, 462(7273), 566.</li> <li>Nowotny, Helga. "Democratising Expertise and Socially Robust Knowledge." Science and Public Policy 30, no. 3 (2003): 151–56.</li> </ul>			
20	Th Jun 1 <sup>st</sup>	Course wrap-up and evaluations			
		Final draft of term paper due: Tuesday, June 6 10am			

If you need a review of the structure and function of government as it relates to policy, consider this optional reference text:

Birkland, Thomas A. An Introduction to the Policy Process: Theories, Concepts, and Models of Public Policy Making. Fourth Edition. New York: Routledge, 2016.

Also, consider this optional reference on writing:

Hacker, Diana, and Nancy Sommers. *A Writer's Reference*. 8 edition. Boston; New York: Bedford/St. Martin's, 2014.

Additional readings available for download through Canvas; see daily schedule for details

#### Assessment

This is a writing proficiency course, and as such a significant portion of your grade is based upon essay assignments. Within the first several sessions, I will assign a brief "warm-up" essay that will allow me to learn your writing style and provide you with initial feedback. Then, each student will produce a draft of an essay reflecting upon the readings for one day in light of the overall course, current events, and the content of your other courses. After the classroom discussion for that day and with feedback on writing from me, the student will then revise their writing for a final reflection and integration essay. I expect you to treat the rough draft as if it were a final draft. It will be graded as such. Your revisions should reflect my feedback on grammar, structure, and content, as well as the additional insights that you gain by participating in the discussion of your allotted day's readings.

Each student will develop a **term paper** that utilizes the insights from the course and applies them as a lens to interpret an environmental controversy of your choosing. This final essay is due during our allotted final examination period; more details on the topic and format will be available in the first weeks of the course. You will have to vet your topic with me several weeks before the final due date.

In addition to these essay assignments, prior to each class session you will submit a brief set of at least two **daily discussion questions** pertaining to the day's readings. We will use these questions to guide our daily discussion. You will not be penalized for misunderstanding the readings so long as you put forth a good faith effort each day.

Discussion questions should be open ended rather than factual. Seek to ask questions that you be contended to grapple with for 5-10 minutes in a small group discussion rather than questions to which you can look up answers on the Google. These discussion questions will be graded on a scale of 0-5 as follows:

- 5/5: Well-informed and formulated questions, linking ideas across readings and making connections with real-world cases.
- 4/5: Well-written questions that demonstrate significant effort and understanding, but lacking integration with other ideas.
- 3/5: Questions demonstrate that the student did at least some of the readings and tried to understand the information.
- 2/5: Ill-informed or articulated questions.
- 1/5: The questions suggest little understanding of the reading and are poorly written.
- 0/5: No attempted question.

I will drop the 4 lowest grades on these discussion questions, and they will collectively be worth 20% of your final grade.

Course grades will be rounded to the nearest whole number.

Class participation	20%	A	>94%
Warm-up essay	5%	<b>A-</b>	>90%
Reading reflection and integration assignment, draft	10%	B+	>87%
Reading reflection and integration assignment, final	15%	В	>84%
Daily discussion questions	20%	В-	>80%
Term Paper	30%	C+	>77%
		C	>74%
		C-	>70%
		D+	>67%
		D	>64%
		D-	>61%
		F	<61%

Late papers will be penalized 10% per day, with the penalty beginning at the time stated on the syllabus (i.e., a paper turned in within the first 24 hrs has a maximum possible grade of 90%). **I will not accept late term papers or daily question submissions.** 

I do not typically offer extra credit or make-up assignments.

**Participation:** Participation is important in this class; arriving on time to class meetings is necessary, but not sufficient if you would like a good grade. I want to hear all of your opinions, not only because this class is about successful communication, but also because **you have valuable things to say** (when you come well-prepared).

Students who earn an **A** for participation are those who prepare for class by doing all of the readings, come to class with questions in hand, and who speak up. Referencing the readings is a good strategy, but simply restating what you read is not enough; I want you to synthesize and contribute new ideas when you have them. Effort toward quality counts; quantity alone will not earn you an A. Yes, shy people can earn an A. But no, shy people cannot earn an A without speaking. If you're feeling shy but ambitious, come see me about

strategies to participate successfully.

Those who earn a **B** for participation are students who reliably do the readings, put forth a good-faith effort to understand them, and participate frequently. These students speak up most weeks to contribute something. It is clear that these students are actively intellectually engaged.

**C**-level participants may find themselves wandering in a few minutes late here and there. They do the readings most of the time and speak up, but less frequently. Their ideas are less-well supported by the readings than A and B level participants, but they're trying. Remember: C is average.

**D**-level participation, as you might guess, is lower in quality and quantity than C-level. Unexcused absences will land you in this realm, as will coming to class unprepared.

Students earn participation grades of **F** by not coming to class reliably and by not preparing for class.

I attempt to give you credit for attempted participation. I will ask you follow-up questions to help you articulate your ideas. Please don't be frightened or intimidated by this; I am simply trying to help you to develop and voice your ideas.

# **Course Requirements**

This course has significant readings. Complete the readings by the dates listed on the syllabus and come to class prepared to discuss them.

I encourage you to try <u>Zotero</u>, Refworks, or EndNote software to take notes on your readings for this and your other classes. All three are databases that will help you create effortless bibliographies and keep track of all of your reading notes. Using them will serve you well, whether you are beginning your academic careers or graduating this year. Come see me or talk to your librarian (they like students who ask questions) to learn about these software programs. Zotero is FREE.

We will be discussing emotionally charged issues. You must debate issues with your classmates in a professional and respectful manner. We can and should respectfully disagree with each other, and each of us has something to learn from every other person in the classroom. The classroom environment must be simultaneously supportive and challenging, and each of us has a role to play in creating that atmosphere.

I will reliably be available for discussing any topics related to class during office hours, or by appointment. **My office hours are there for you. Please come see me.** 

This syllabus is subject to change. Changes, if any, will be announced in class. Students will be held responsible for all changes; you should probably go to class.

### **Academic Dishonesty Policy**

Western Washington University has an official policy concerning **academic dishonesty** that is published in the General Catalog in Appendix D. **All students in this seminar are expected to abide by this and other policies listed in the official catalog**. Please see the following resources.

- Plagiarism Policies & Guidelines at WWU WWU Libraries
- The Student's Guide to Avoiding Plagiarism WWU Dept. of Sociology
- <u>Understanding and Avoiding Plagiarism</u> (brochure) WWU Libraries
- Appendix D of the Western Catalog: Academic Honesty Policy and Procedure.

## **Reasonable Accommodation Policy**

It is the policy of Western Washington University to provide reasonable accommodation to the known

physical, sensory, or mental limitations of qualified individuals except where such accommodation would impose undue hardship on the institution. *To request disability accommodation*, please contact disAbility Resources for Students office, 650-3844, or for student assistance related to required course procedures, please contact the Student Life office, 650-3706.

# **Ethical Computing**

Students are also responsible for knowing and adhering to WWU's standards for ethical computing. Refer to these web sites:

- Policy for Responsible Computing <u>http://west.wwu.edu/atus/helpdesk/acceptableusepolicy.shtml</u>
- Ethical Conduct: User Agreement for WWU Network and Computer Resources <a href="http://west.wwu.edu/atus/helpdesk/useragreement.shtml">http://west.wwu.edu/atus/helpdesk/useragreement.shtml</a>