

## AMS 290: Doing Policy Relevant Science and Engineering

Instructor: Marc Mangel ([msmangel@ucsc.edu](mailto:msmangel@ucsc.edu))  
145 Baskin Engineering

Overview: This is a seminar course on ways that we can make the science and engineering we do more relevant to policy. Our main readings will come from Roger Pielke Jr.'s book **The Honest Broker** (Cambridge University Press). In addition, I have added a variety of other journal articles and book chapters [optional reading] that can be considered supplementary (and will help you build your library on this topic). The readings come from my own areas of expertise, environmental science (especially agricultural pest control and fisheries) and public health. I hope that you will at least glance at each of them each week. They can all be found at:

<http://www.soe.ucsc.edu/classes/ams290/Fall2008/>

Except for the meeting on Sept 29, when I will lead the discussion, this will be a shotgun seminar: we will draw the name of the leader of discussion for that week from a hat. This ensures that everyone prepares the reading material and thinks about how they would lead a discussion. It also means that there will be no auditors – either you are in for the quarter or you are out. To receive a passing grade you can miss no more than one meeting.

My dream result for this seminar is that we write our own paper on “Doing Policy Relevant Science; Understanding Policy Relevant Science”.

Pre-requisites: Permission of the instructor

Time and location: Mondays 10-12 am, Baskin Engineering Room 137

### Approximate Topical Outline

Sep 29: Introductions, Pasteur's Quadrant and the Problem Solving Plane

Reading: Ludwig, Mangel, and Haddad (2001); Rittel and Webber (1973)

Optional: Burkhardt and Schneider (2004); Forbes (1887)

Oct 6: The Roles of Science in Policy and Politics

Reading: Pielke, Chapter 1

Optional: Cullen (1990); Schneider (2000); Dowell and Wange (1986)

Oct 13: Science and Democracy

Reading: Pielke, Chapter 2

Optional: Hobbs and Fowler (2008); Newkirk (2006), Nuffield (2007)\* Chapter 2  
Langmuir (1989); Oreskes (2003)

Oct 20: Science and Decision Making

Reading: Pielke, Chapter 3

Optional: Jasanoff (2005) Taubes (2007)\*Pielke (2003)\*; Koopmans (1965), a gem of scientific and mathematical writing

Oct 27: Values

Reading: Pielke, Chapter 4

Optional: Mangel (2001); Dyson (2008), Nordhaus (2008)\* [Brave ones might want to take a look at the entire Stern review, found on the web]

Ebbin (2003); Springer (2006)

Nov 3: Uncertainty

Reading: Pielke, Chapter 5

Optional: Jasanoff (2007); Brooks et al (2008); Hill et al (2007)

Nov 10: How Science Policy is Shaped

Reading: Pielke, Chapter 6

Optional: Sovacool and Siman-Sovocol (2007), Nuffield (2007)\* Chapter 3

Nov 17: When Scientists Politicize Science

Reading: Pielke, Chapter 8

Optional: Ruckelhaus et al (2002), Ladle et al (2005), Cronon (1995)\*

Nov 24: Making Sense of Science in Policy and Politics

Reading: Pielke, Chapter 9

Optional: Jasanoff (1987), Leisher (2008)

Dec 1: A Framework of Policy Relevant Science and Engineering

Reading: Pielke, Appendix A

Optional: Perry et al (1999); Belgrano and Fowler (2007);Nuffield (2007)\*, Chapter 8

\*These are chapters excerpted from the following books

W Cronon. 1995. **Uncommon Ground. Rethinking the Human Place in Nature.**  
W.W. Norton, New York

W Nordhaus. 2008. **A Question of Balance. Weighing the Option Global Warming Policies.** Yale University Press, New Haven

Nuffield Council on Bioethics. 2007. **Public Health: Ethical Issues.** Obtained at [www.nuffieldbioethics.org](http://www.nuffieldbioethics.org)

Oreskes (2003) in Canham, C.D., Cole, J.J., and W.K. Lauenroth. 2003. **Models in Ecosystem Science.** Princeton University Press, Princeton, NJ

Pielke (2003) in Canham, C.D., Cole, J.J., and W.K. Lauenroth. 2003. **Models in Ecosystem Science.** Princeton University Press, Princeton, NJ

Taubes, G. 2007. **Good Calories, Bad Calories. Challenging the Conventional Wisdom on Diet, Weight Control, and Disease.** Alfred Knopf, New York