

**Science and Technology Policy**  
**ENVS 5100**  
**University of Colorado-Boulder – Fall 2015**

Roger A. Pielke, Jr.  
Mondays 14:00-16:30 PM  
Location: CSTPR Conference Room, 1333 Grandview Ave.

Course Homepage:  
[http://sciencepolicy.colorado.edu/students/envs\\_5100/](http://sciencepolicy.colorado.edu/students/envs_5100/)

Office Hours: Mondays 11:00-13:00 and by appointment  
Location: CIRES Center for Science and Technology Policy, 1333 Grandview Ave.  
email: [pielke@colorado.edu](mailto:pielke@colorado.edu)

**Overview and Purpose of the Course**

This course is part of a three course sequence that serves in partial fulfillment of the requirements for the Graduate Certificate in Science and Technology Policy. However, you need not be enrolled in the Certificate to take the course. There are no prerequisites required to take the course, other than graduate student status and curiosity about science, technology and policy.

Graduate study provides you with an opportunity to gain expertise within a particular disciplinary or interdisciplinary specialty. Such expertise is essential to the processes of creating new knowledge and integrating existing knowledge to produce novel insights. But society looks increasingly to experts to do more than conduct research and produce knowledge -- society looks to experts to play a central role in securing the benefits of the nation's investment in knowledge, while at the same time, helping to protect against the misuse or unintended consequences of science and technology. In short, society expects experts to contribute to decision making in public, private and civic settings.

Understanding the roles of science and technology in broader societal context – as well as the influences of that context on the practices and uses of science and technology would thus seem to be a prerequisite to a successful career at the science-society interface.

This course seeks to contribute to such improved understandings by introducing students to the area of research and practice typically characterized as “science and technology policy.” In 2015, this course will focus on two areas of this vast academic landscape. The first half of the course will focus on science in policy and politics. The second half of the course will focus on the role(s) of science and technology in economic growth.

## Requirements of the Course

### Seminar Format

The course is a seminar, which means that we each share responsibility for participation and leadership. There are a considerable amount of readings in the course and consequently the course has been structured in a way to allow for sharing responsibility for learning. The formal requirements of the course include informal weekly one-pagers, frequent opportunities for student-led classes and presentations, attendance at several outside-class events and an individual term project.

### Readings

There are a lot of readings for this class, and many more will be made available for those interested in pursuing issues further. All required articles will be made available either via hyperlink (which may need to be accessed from an on-campus server), by email or from the course WWW site, and most in PDF or HTML format. If you have any difficulties obtaining the readings, please just send me an email.

There are four books that we will read for the class and one is recommended as optional:

- Alice Dreger, 2015. **Galileo's Middle Finger**
- Paul Sabin, 2013. **The Bet**
- Diane Coyle, 2014, **GDP**
- TBD – Class project
  
- OPTIONAL: Pielke, 2007. **The Honest Broker**

ORDER THESE TODAY. You are responsible for obtaining access to these books. My experience is that the online retailers offer the cheapest and fastest means of delivery, but they should also be available at the CU Bookstore.

### Guest Speakers

As opportunities allow we may have guest speakers join us from time-to-time. If you'd like to recommend a guest, please do so, and I will be happy to try to accommodate.

So far we have:

- Keith Kloor, science journalist
- Alice Dreger, Northwestern University
- Jan Marco Mueller, European Commission

### Weekly One Pagers

Every week you are expected to turn in a one-page essay. The essay will be due every **Thursday** to be submitted via the course email list-serv: [envs5100@lists.colorado.edu](mailto:envs5100@lists.colorado.edu)

You might consider addressing the following two items in your submission:

1. The most important thing I learned from the class discussion and/or readings was . . .
2. The thing I still don't understand is . . .

You are of course free to discuss any topic related to the class beyond these two questions as well.

The purpose of this exercise is to allow you an opportunity to discuss aspects of the readings, integrate other material with the week's focus, or to raise questions about what was unclear or unanswered by the readings. A secondary purpose is to ensure that you have an opportunity to provide me with feedback on the readings and your progress/satisfaction in the course.

The first submission is due August 27 and the final one is due December 10. No submission is expected November 26, which is Thanksgiving.

These are very important.

### Periodic Assignments

There will be periodic assignments throughout the term. Several are already listed on the syllabus, there may be more.

### Outside Events

There are a wide range of science and technology policy events always going on in Boulder. This fall we will have a seminar series organized by the Center for Science and Technology Policy Research. Let's share responsibility for announcing upcoming events in class and via the email list.

### **Grading**

Your grade will be determined as based on your effort and performance on all of the above, plus a final exam of some sort (details TBD). If you come to class, participate, do the readings and engage with the material and your peers, you will get an excellent grade in this class.

**Assignment Tracking Table  
(current as of August 2015, subject to change!)**

<b>DATE</b>	<b>ONE-PAGER DUE</b>	<b>NOTES &amp; ASSIGNMENTS</b>
24 August	1-pager (8/30)	First class
31 August	1-pager (9/3)	BOOK CLUB PRESENTATIONS DUE
7 September	1-pager (9/10)	NO CLASS – Labor Day
14 September	1-pager (9/17)	EXPERT ADVICE ASSIGNMENT DUE
21 September	1-pager (9/24)	KEITH KLOOR visit
28 September	1-pager (10/1)	BOOK CLUB #1 ALICE DREGER visit
5 October	1-pager (10/8)	SCIENCE & PUBLIC ASSIGNMENT DUE
12 October	1-pager (10/15)	BOOK CLUB #2
19 October	1-pager (10/22)	TECHNOLOGY & GROWTH ASSIGNMENT DUE
26 October	1-pager (10/29)	BOOK CLUB #3
2 November	1-pager (11/5)	
9 November	1-pager (11/12)	JAN MARCO MUELLER visit
16 November	1-pager (11/19)	OP-ED ASSIGNMENT DUE
23 November	THANKSGIVING	NO CLASS - Thanksgiving
30 November	1-pager (12/3)	SCIENCE ADVICE PROJECT DUE
7 December	1-pager (12/10)	Course wrap-up
17 December 1:30-4:00PM	FINAL EXAM	Details TBA

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**Tentative Schedule and Readings**  
(which may be changed at any time)

**Introduction**

- **Week 1 – August 24**  
**Introductions & Overview**

Welcome  
Introductions  
Email list  
Syllabus

First Introduction to the Course Themes  
What you should be reading on a regular basis

First two assignments discussed and assigned

- **Week 2 – August 31**

**Book club presentations & vote**

**Themes of the course – case study**

What is policy expertise?  
What is the role of policy expertise and policy making?

Sarewitz, D. 2015. Expertise and advocacy in an age of big science, Chapter 4 in  
(Wengart and Wagner eds.) **Wissenschaftliche Politikberatung im Praxistest**.

Optional: Pielke, R. A. 2007. *The honest broker: making sense of science in policy and politics*. Cambridge: Cambridge University Press.

- **Week 3 – September 7 – LABOR DAY -- NO CLASS**
- **Week 4 – September 14**  
**Science Advice #1**  
**SETI Assignment Due**

**To get you started:**

<http://www.theguardian.com/science/political-science/2015/jul/23/if-we-discover-extraterrestrial-life-what-happens-next>

<http://rsta.royalsocietypublishing.org/content/369/1936.toc>

- **Week 5 – September 21**

**Science and the Media**

*Research*

Rekdal, O. B. (2014). Academic urban legends. *Social studies of science*, 44(4), 638-654.

Ioannidis, J. P. (2005). Why most published research findings are false. *Chance*, 18(4), 40-47.

D. H. Freedman, 2010. Lies, Damned Lies and Medical Science, The Atlantic, November. [http://www.theatlantic.com/magazine/archive/2010/11/lies-damned-lies-and-medical-science/8269/?single\\_page=true](http://www.theatlantic.com/magazine/archive/2010/11/lies-damned-lies-and-medical-science/8269/?single_page=true)

*Cases*

J. Bohannon, 2015. I Fooled Millions Into Thinking Chocolate Helps Weight Loss. Here's How. <http://io9.com/i-fooled-millions-into-thinking-chocolate-helps-weight-1707251800>

J. Singal, 2015. The Case of the Amazing Gay-Marriage Data: How a Graduate Student Reluctantly Uncovered a Huge Scientific Fraud, <http://nymag.com/scienceofus/2015/05/how-a-grad-student-uncovered-a-huge-fraud.html>

*Guest*

K. Kloor, 2014. The GMO-Suicide Myth, <http://issues.org/30-2/keith/>

K. Kloor, 2015, The Battle for the Soul of Conservation Science, <http://issues.org/31-2/kloor/>

- **Week 6 – September 28 – Book Club #1**

Alice Dreger, 2015. **Galileo's Middle Finger.**

Alice Dreger (invited guest)

- **Week 7 – October 5  
Science & the Public**

**Science & Public assignment due**

**Dan Kahan Lecture -- [https://www.youtube.com/watch?v=AshWK\\_95vto](https://www.youtube.com/watch?v=AshWK_95vto)**

Kahan, D. M. (2015). Climate-Science Communication and the Measurement Problem. *Political Psychology*, 36(S1), 1-43. <http://biotech.law.lsu.edu/blog/ssrn-id24590571.pdf>

Spruijt, P., Knol, A. B., Vasileiadou, E., Devilee, J., Lebret, E., & Petersen, A. C. (2014). Roles of scientists as policy advisers on complex issues: a literature review. *Environmental Science & Policy*, 40, 16-25.

Stilgoe, J., Lock, S. J., & Wilsdon, J. (2014). Why should we promote public engagement with science?. *Public Understanding of Science*, 23(1), 4-15.

- **Week 8 – October 12**  
**Economic Growth – Book Club #2**

Coyle, D. (2014). GDP: A brief but affectionate history. Princeton University Press.

Commission on the Measurement of Economic Performance and Social Progress:  
[http://www.communityindicators.net/system/publication\\_pdfs/9/original/Stiglitz\\_Sen\\_Fitoussi\\_2009.pdf?1323961027](http://www.communityindicators.net/system/publication_pdfs/9/original/Stiglitz_Sen_Fitoussi_2009.pdf?1323961027)

Nordhaus, W. D. (1996). Do real-output and real-wage measures capture reality? The history of lighting suggests not. In *The economics of new goods*(pp. 27-70). University of Chicago Press.  
<http://dido.wss.yale.edu/P/cp/p09b/p0957.pdf>

- **Week 9 – October 19**  
**Technology and Globalization**

Bernhofen, Daniel M. and El-Sahli, Zouheir and Kneller, Richard, Estimating the Effects of the Container Revolution on World Trade (2013). CESifo Working Paper Series No. 4136. Available at SSRN: <http://ssrn.com/abstract=2228625>

White, L. (1974). Technology assessment from the stance of a medieval historian. *Technological Forecasting and Social Change*, 6, 359-369.  
[http://sciencepolicy.colorado.edu/students/envs\\_5100/WhiteLTechAssess.pdf](http://sciencepolicy.colorado.edu/students/envs_5100/WhiteLTechAssess.pdf)

Taylor, S. M. (2011). Buffalo Hunt: International Trade and the Virtual Extinction of the North American Bison. *The American Economic Review*, 101(7), 3162-3195.  
[http://bwl.univie.ac.at/fileadmin/user\\_upload/lehrstuhl\\_ind\\_en\\_uw/lehre/ws1213/SE\\_Energy\\_WS12\\_13/Buffalo\\_Hunt\\_International\\_Trade\\_and\\_the\\_Virtual\\_Extinction\\_of\\_the\\_North\\_American\\_Bison.pdf](http://bwl.univie.ac.at/fileadmin/user_upload/lehrstuhl_ind_en_uw/lehre/ws1213/SE_Energy_WS12_13/Buffalo_Hunt_International_Trade_and_the_Virtual_Extinction_of_the_North_American_Bison.pdf)

Cullather, N. (2007). The foreign policy of the calorie. *The American Historical Review*, 112(2), 337-364. <http://ahr.oxfordjournals.org/content/112/2/337.short>

- **Week 10 – October 26**  
**Book Club #3**

**DETAILS TBD**

- **Week 11 – November 2**  
**Technology and the State of the World**

Sabin, P. (2013). *The Bet: Paul Ehrlich, Julian Simon, and our gamble over Earth's future*. Yale University Press.

ENCYCLICAL LETTER LAUDATO SI' OF THE HOLY FATHER FRANCIS ON CARE FOR OUR COMMON HOME

[http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si\\_en.pdf](http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf)

Hans Rosling: <https://www.youtube.com/watch?v=ZSGoqw45tKI>

Oxford Debate: <https://www.youtube.com/watch?v=fLei2JX1-ok>

- **Week 12 – November 9**

**Class visit Jan Marco Mueller**

Wilsdon, J., Doubleday, (2015). FUTURE DIRECTIONS FOR SCIENTIFIC ADVICE IN EUROPE. <https://www.sussex.ac.uk/webteam/gateway/file.php?name=future-directions-for-scientific-advice-in-europe-v5a-online-version-26042015.pdf>

Alemanno, A. (2014). What role for a chief scientist in the European Union system of scientific advice?. *European Journal of Risk Regulation*, 3.

- **Week 13 – November 16**

**Op-ed Assignment Workshop**

- **Week 14 – November 23 – THANKSGIVING WEEK -- NO CLASS**
- **Week 15 – November 30**  
**Science advice #2**  
**Group assignment – NFL & concussions**

Selections from Fainaru-Wada, M., & Fainaru, S. (2013). *League of denial: The NFL, concussions, and the battle for truth*. Three Rivers Press.

<http://retractionwatch.com/2015/07/24/authors-ties-to-nfl-lead-to-correction-for-review-that-cast-doubt-on-brain-risk-from-sports/>

- **Week 16 – December 7**

**Course Wrap-Up**

**DECEMBER 17**

**FINAL EXAM – DETAILS TBA**

## **Boulder Campus Fall Syllabus Statements**

(1) The Boulder Provost's Disability Task Force recommended syllabus statement:

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact: [303-492-8671](tel:303-492-8671), Center for Community N200, and <http://www.colorado.edu/disabilityservices>.

If you have a temporary medical condition or injury, see guidelines at <http://www.colorado.edu/disabilityservices/go.cgi?select=temporary.html>

Disability Services' letters for students with disabilities indicate legally mandated reasonable accommodations. The syllabus statements and answers to Frequently Asked Questions can be found at <http://www.colorado.edu/disabilityservices>

(2) It is the responsibility of every instructor to clearly explain his or her\ procedures about absences due to religious observances in the course syllabus so that all students are fully informed, in writing, near the beginning of each semester's classes. Campus policy regarding religious observances states that faculty must make reasonable accommodation for them and in so doing, be careful not to inhibit or penalize those students who are exercising their rights to religious observance. Faculty should be aware that a given religious holiday may be observed with very different levels of attentiveness by different members of the same religious group and thus may require careful consideration to the particulars of each individual case. See: [http://www.colorado.edu/policies/fac\\_relig.html](http://www.colorado.edu/policies/fac_relig.html)

If you have questions about providing students with religious accommodations, please contact the Office of Discrimination and Harassment at: [303-492-2797](tel:303-492-2797).

A comprehensive calendar of the religious holidays most commonly observed by CU-Boulder students is at: <http://www.interfaithcalendar.org/>

Recommended syllabus statement:

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. See full details at: [http://www.colorado.edu/policies/fac\\_relig.html](http://www.colorado.edu/policies/fac_relig.html)

(3) Faculty and students should be aware of the campus "Classroom Behavior" policy at

<http://www.colorado.edu/policies/classbehavior.html> as well as faculty rights and responsibilities listed at:

[http://www.colorado.edu/FacultyStaff/faculty-booklet.html#Part\\_1](http://www.colorado.edu/FacultyStaff/faculty-booklet.html#Part_1)

These documents describe examples of unacceptable classroom behavior and provide information on how to handle such circumstances should they arise. Faculty are encouraged to address the issue of classroom behavior in the syllabus.

Recommended syllabus statement:

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at

<http://www.colorado.edu/policies/classbehavior.html>

and at:

[http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student\\_code](http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code)

(4) The Office of Discrimination and Harassment recommends the following syllabus statement:

The University of Colorado at Boulder Discrimination and Harassment Policy and Procedures, the University of Colorado Sexual Harassment Policy and Procedures, and the University of Colorado Conflict of Interest in Cases of Amorous Relationships policy apply to all students, staff, and faculty. Any student, staff, or faculty member who believes s/he has been the subject of sexual harassment or discrimination or harassment based upon race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at [303-492-2127](tel:303-492-2127) or the Office of Student Conduct (OSC) at [303-492-5550](tel:303-492-5550). Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://www.colorado.edu/odh>

(5) The Boulder campus has a student Honor Code and individual faculty members are expected to familiarize themselves with its tenets and follow the approved procedures should violations be perceived. The Honor Council recommended syllabus statement:

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council ([honor@colorado.edu](mailto:honor@colorado.edu); [303-735-2273](tel:303-735-2273)). Students who are found to

be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at:

<http://www.colorado.edu/policies/honor.html>

and at:

<http://www.colorado.edu/academics/honorcode/>