

Citizen Science: Environment, Technology & Democracy (ENVI 235/POLI 235)
Macalester College, Spring 2007
Tues/Thurs 2:45– 4:15pm OLIN RICE 270

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Access course webpage as ENVI 235

Course Description

Rachel Carson's 1962 publication *Silent Spring* harkened the beginning of the environmental citizen science movement in America. This knowledge revolution suggested that everyday people had an important role to play in deciding, observing and contesting how science and technology were being developed and implemented for the good of humanity and the natural world. In our present day, the Silent Spring Institute based in Cape Cod continues to push Carson's agenda forward on important enviro-scientific controversies like the fight against breast cancer.



Styrofoam Henge, where modern technology clashes with an ancient civilization.

Taking our cue from Carson, this course examines the role of citizens in environmental decision-making. We will focus on environmental controversies as important sites for examining how information, science and governance come together. Through our engagement with a range of environmental controversies we will think through some core concepts: **risk, uncertainty, expertise, transparency, credibility, trust, deliberation and citizenship.**

Students will also be introduced to the field of science and technology studies (STS). STS scholars have been at the forefront of thinking about how citizens are involved in the production and deployment of science and technology. STS frameworks will help us evaluate how we understand and construct avenues for public engagement on these fundamental societal questions.

Student Evaluation

Students will be evaluated on the basis of:

1) Attendance & participation (20%)

You are expected to attend every class. If you must be absent due to illness or other extenuating circumstance, contact me as soon as possible. More than one absence may result in a reduction in your participation grade. If you are late to class regularly, this may be counted as an absence. You are responsible for checking in with your peers for missed material. Your participation grade will be based on thoughtful, respectful, and productive engagement in class discussions. Your creativity is always encouraged.

2) Submission of reading reflections (20%)

Reading reflections are intended to encourage you to synthesize reading material and begin articulating your personal positions on these complicated issues. Your reflections are **due by 12pm** the day of class. Your pieces should be approximately 350-500 words in length, about two to three paragraphs. They must be submitted through the course website. **DO NOT** e-mail reflections to me. Late reading reflections will not be accepted. These will be graded on a satisfactory or outstanding basis for each submission. Occasionally, I will respond directly to your submission on Moodle. Most times, I will refer to issues raised in your reflections in class.

3) Co-leading class discussion (20%)

You will be asked to co-lead class twice during the semester. Working in a small group, you will be responsible for leading a **CONTROVERSY WORKSHOP** and a **FILM** discussion. More details about the expectations for each of these assignments will follow. You are not expected to turn in a reflection when you are leading class.

4) Organize a Café Scientifique (10%)

As a class we will be working with the Bell Museum of Natural History to sponsor a Café Scientifique in April. You will be expected to participate in this project. We will work throughout the semester to choose a theme, a venue and organize and publicize the event.

5) Controversy Study – Website Project (Total 30%)

You will choose a controversy, not limited to an environmental focus, to follow throughout the semester. See the final page of this syllabus for some topic examples. This research project will be evaluated in four stages throughout the semester. You will be asked to present your 1) preliminary idea 2) an outline & workplan 3) a working draft; and 4) a final project. The format for the assignment will be a web page. Throughout the semester we will working on basic web page design skills. More details about the project will follow.

If you submit any of the above assignments late, you WILL be graded down one full step for each day past the deadline. For example, an assignment handed in one day late will begin with a B+; two days late a C+.

Final Grade Scale: A (96-100); A- (91-95); B+ (87-90); B (83-86); B- (80-82)

Similar ranges for C grades (70-79) and D grades (60-69); Below 60 is a failing grade.

Academic Integrity: It is assumed that all members of the class will act with academic integrity and will not engage in behavior such as plagiarism, academic dishonesty, misrepresentation, or cheating. Please refer to the college's policy on academic honesty.

Summary of Topics and Readings

Tues Jan 23: Course Introduction

Part I: Introduction to Science, Technology and Politics

Thurs Jan 25: The Social Contract for Science

- J. Lubchenco. 1998. "Entering the Century of the Environment: A New Social Contract for Science," *Science* Vol. 279: 491-496.
- D. Sarewitz. 2004. "How science makes environmental controversies worse," in *Environmental Science and Policy*. Vol 7: 385-403.

Tues Jan 30: Why trust science?

- C. D. Connor. 2005. "Chapter One: What Science, What History, What People," in *A People's History of Science*. NY: Nations Books. Pp.1-25.
- S. Bocking. 2004. "Chapter 2: The Uncertain Authority of Science" in *Nature's Experts*. Piscataway, NJ: Rutgers Press. Pp. 16-44. (This book is required for purchase)
- S. Bocking. 2004. "Chapter 6: "Science in a Risky World" in *Nature's Experts*. Piscataway, NJ: Rutgers Press. Pp. 135-160. (This book is required for purchase)

Thurs Feb 1: Why trust democracy?

- B. Barber. Chapter 7: A Conceptual Frame and "Chapter 10: The Real Present" in *Strong Democracy*. Berkeley: UC Press. Pp. 139-162; 261-311.

Tues Feb 6: Citizen Science

- S. Bocking. 2004. "Chapter 8: Democratic Environmental Science" in *Nature's Experts*. Piscataway, NJ: Rutgers Press. Pp. 199-225. (This book is required for purchase)
- R. Schlove. 1994. "Chapter 3: Strong Democracy and Technology," in *Technology and Democracy*. Guilford Press. Pp. 25-57.
- * *Website review of citizen science organizations*

Thurs Feb 8: Models of Citizen Science Engagement

- D. Guston. 1999. "Evaluating the First US Consensus Conference," *Science, Technology & Human Values*. Vol 24(4): 451-482.
- A. Irwin. 1995. "Chapter 6: Science Shops and Successful Experiments" in *Citizen Science*. London: Routledge Press.

Tues Feb 13: Café Scientifique at Varsity Theater at 6pm (Evolution Controversy)

- M. Sink. 2006. "Science Comes to the Masses (You Want Fries With That?)" *New York Times*. February 21, 2006.
- Check out website - <http://www.cafescientifique.org>
- * Submit a post-event reflection

Part II: Case Study Modules

Topic A: Environmental health and justice

Thurs Feb 15: Lecture: Are We a Toxic Nation?

- A. Szasz. 1994. Chapters 2-4 in *Ecopolitism: Toxic Waste and the Movement for Env Justice*. Minn: Univ of MN Press. Pp. 11-99.

Tues Feb 20: Student led workshop

Pollution and health in Twin Cities: 3M/Cottage Grove Case Study

Thurs Feb 22: Café Scientifique Planning with guest Shania Matteson, Bell Museum

Tues Feb 27: Student led film discussion

A Civil Action

Topic B: Biotechnology

Thurs March 1: RESEARCH DAY 1: Web Design Workshop with IT staff

* Submit your idea for a final project on Moodle on Thursday by 5pm.

Tues March 6: Lecture: Food, Genes and Power

R. Schurman and D. Kelso (eds). 2003. "Introduction" and "The Migration of Salmon"
Engineering Trouble: Biotechnology and its Discontents. Berkeley: UC Press. Pp.1-23; 84-110

Thurs March 8: Student led workshop

USDA - Cloned Food Regulation

March 12-16 Spring break!!!!

Tues March 20: Student led film discussion

Soylent Green

Topic C: Regulating the Power Industry

Thurs March 22: Lecture: Accidents and Incidents

- C. Perrow. 1984. Chapters 1-3. *Normal Accidents: Living with High Risk Technology*. NY: Basic Books. Pp. 15-100. *Note: Skim chapters one and two – focus on three.*

Tues March 27: Student led workshop

Yucca Mountain and the transportation of nuclear wastes

Thurs March 29: Student led film discussion

The China Syndrome

Tues April 3: RESEARCH DAY 2

Share an outline of your paper and describe the ways in which you are building on citizen science scholarship.

Part III. Civic Epistemology

Thurs April 5: Our Alternatives

- S. Jasanoff. 2003. "Technologies of Humility: Citizen Participation in Governing Science."
Minerva Vol 41 (3). Pp. 223-244.

- M. O'Brien. 2002. "Chapter 12: We Know How" in *Making Better Environmental Decisions*. Cambridge: MIT Press. Pp. 171-190.

Tues April 10: Moving Forward

- B. McKibben. 2003. "Enough?" and "Is Enough Possible?" in *Enough: Staying Human in an Engineering Age*. NY: Henry Holt and Co. Pp.109-199.

Thurs April 12: Background reading and prep for Café event

Readings TBA

Tues April 17: Class Canceled – AAG meetings

* Full paper drafts due on Moodle by 5pm.

Thurs April 19: RESEARCH DAY 3

Peer review drafts in small groups in class and discuss your plans for further development

Tues April 24: 6pm - Our Café Scientifique – Nina's Café

Thurs April 26: Summing up and course evaluations

Tues May 1: Debut your website in class

**** Final Project DUE on Friday May 4 5pm by e-mail.**



Examples of Potential Controversy Study Topics:

Silicon Breast Gel Implants

Approval of RU 486

Stem cell research

Nanotechnology

Climate change

Atrozime and frogs

DDT Use

Human and Animal Cloning

Wind energy

Cryogenics

Bioprospecting