

## Earth Science 111. Earth Science and Environmental Justice

Spring 2009

Class Meetings: Tuesday and Thursday, 1:30-2:45 pm, Ely Hall 104

Instructor: Jill Schneiderman

Office: Ely Hall 118B

Office Hours: Monday and Wednesday, 1-2pm no appointment necessary (& by appointment)

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“We are going to have to gather up the fragments of knowledge and responsibility that we have parceled out to the bureaus and the corporations and the specialists....We are going to have to put those fragments back together again in our own minds and in our families and households and neighborhoods.”

~Wendell Berry, *A Continuous Harmony*

### ***Course Description***

The environmental justice movement is one civil rights movement of the 21<sup>st</sup> century. It is relatively young but has grown rapidly. Activists in the movement challenge structures and institutions of power that systematically subject less powerful groups of living beings to debilitating conditions. Our course examines the natural science related to and social roots of environmental justice issues. By the end of the semester, students will be familiar with the principles of environmental justice and will have gained a basic understanding of the earth science behind selected environmental issues, namely water, climate, energy, and mineral resources.

There is a strong emphasis on reading and writing in the course and active participation in our class meetings. I expect you to attend every class and arrive on time. Please be eager and prepared at every class meeting to share with other classmates your questions, observations, confusions, and critiques. While not all students relish outspoken participation, we will all benefit from the struggle to articulate our thoughts.

Office hours are for you. Please stop by and discuss any course-related matters. If my office hours do not fit your schedule, I am happy to try to schedule an appointment at a mutually convenient time.

### ***Books***

#### Required

Barbara Murck, *Visualizing Physical Geology*, New York: Wiley, 2008. (This is an e-book. Purchase a card at the college bookstore that has a code for accessing your copy).

Terry Tempest Williams, *Refuge: An Unnatural History of Family and Place*, New York; Vintage Books, 1991.

#### Recommended

William Strunk Jr. and E.B. White, *The Elements of Style*, fourth edition, New York: Longman, 2000.

All written materials for the course are located on our course Blackboard site under “Course Documents.” Please complete all assigned readings **before** the class session to which they pertain. All videos are on 3-hour reserve in the library. Follow links on the syllabus to all audio materials.

### ***Assignments and Grading***

Assignments: 30%

Midterm: 20%

Final exam (take-home): 20%

Reading preparation and class participation: 30%

Please type all written assignments using Microsoft Word, Times New Roman, 12-point font. Make sure your work has your name and page numbers.

Students must attend all classes and complete all exams and assignments on time to receive a passing grade. Late assignments or missed classes will result in reduction of your final grade. If an emergency or an illness arises and you must miss class or you need an extension on an assignment, per *The Student Handbook*, please see your Class Advisor to receive authorization. Unless you receive authorization, I will not accept work more than one week after it is due.

***Grading criteria:***

An “A” grade reflects conspicuous excellence in several areas of the coursework.

A “B” grade reflects general high achievement, and excellence in some aspects of coursework.

A “C” is the acceptable standard for graduation at Vassar. It reflects satisfactory work.

A “D” (as well as a C-) reflects unsatisfactory work.

See page 55-56 of the *Vassar Catalogue 2008/9* for further information.

**Academic accommodations are available for students with disabilities who are registered with the Office of Disability and Support Services. Students in need of disability accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by Office of Disability and Support Services, as indicated in your DSS accommodation letter. I am very happy to work with you and ODSS in order to facilitate your best work in our course.**

***The Writing Center***

Located in the Learning and Teaching Center (LTC), Thompson Library, the Writing Center may be helpful to you in your coursework. Check the LTC website for drop-in hours (<http://ltc.vassar.edu/writingcenter/>) and for hours of consultation stations in the residence halls. Specially trained and experienced students can help you with everything from brainstorming to paragraph organization to grammar. Online resources provided by the LTC available at <http://ltc.vassar.edu/onlineresources/> may also be helpful.

***Schedule of Classes***

***(N.B. please bring with you to each class meeting either a paper or electronic copy of the reading and notes related to video and audio materials)***

**January 22: Introduction to our course.**

First National People of Color Environmental Leadership Summit. Principles of Environmental Justice. 1991. <http://www.ejnet.org/ej/principles.html>

Environmental Racism? <http://www.ncpa.org/ba/ba143.html>

**January 27: What is environmental justice?**

Watch *Laid to Waste: A Chester Neighborhood Fights for its Future* (1996)

Read Robert Bullard, “Environmental Justice in the Twenty-first Century” in Robert Bullard (ed.) *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*, San Francisco: Sierra Club Books, 2005: 19-42.

Read Kristin Shrader-Frechette, *Environmental Justice: Creating Equality, Reclaiming Democracy*, New York: Oxford University Press, 2002: Preface and 3-18.

Receive assignment 1.

**January 29:** **Environmental change and Google Earth**, Meg Stewart, Educational Technologist

**February 3:** **Geographic distribution of environmental risk**, Meg Stewart, Educational Technologist

### **Environmental Justice and Water**

**February 5:** **In class video *FLOW: For Love of Water*** (2008) Irena Salina, dir. (84 minutes)

Watch Amy Goodman interview Maude Barlow on *Democracy Now*, 27 February 2008 (Fast forward to 42 minutes into the program). <http://i2.democracynow.org/2008/2/27/stream>

Assignment 1 due.

**February 10: Earth cycles and the hydrosphere**

Read *Visualizing Geology* (2008) Chapter 1 “Earth System Science.”

Explore "The Hydrological Cycle." WFD. 20 Oct. 2008. Water Framework Directive Initiative. [http://www.euwfd.com/html/hydrological\\_cycle.html](http://www.euwfd.com/html/hydrological_cycle.html).

Explore "The Hydrologic Cycle." WW2010: Online Meteorology Guide. University of Illinois at Urbana-Champaign. [http://ww2010.atmos.uiuc.edu/\(gh\)/guides/mtr/hyd/grnd.rxml](http://ww2010.atmos.uiuc.edu/(gh)/guides/mtr/hyd/grnd.rxml).

Read Karterakis, S.M., B.W. Karney, B. Singh, and A. Guergachi. "The Hydrological Cycle: A Complex History." *Water Science & Technology* 7 (2007): 23-31.

Receive assignment 2.

**February 12: Present and future water crisis**

*Visualizing Geology* (2008) Chapter 11 “Water as a Hazard and a Resource” and “Fresh Water Underground.”

Read Chris Wood, *Dry Spring: The Coming Water Crisis of North America*, Berkeley, CA: Raincoast Books, 2008: 43-84.

Read Meena Palaniappan, Emily Lee, and Andrea Samulon, “Environmental Justice and Water” in *The World’s Water 2006-2007: The Biennial Report on Freshwater Resources*, Peter Gleick (ed.) 2006: 117-144.

Listen/Watch "[Water for Sale: How Business and the Market Can Resolve the World's Water Crisis](#)," (Cato Institute Book Forum, July 21, 2005)

**February 17: Water-related conflict**

Edwin G. Corr, “A Leaking Reservoir of Trust In Israeli-Palestinian Water Talks” in *The Search for Israeli-Arab Peace*. Eds. Edwin G. Coor, Joseph Ginat, and Shaul M. Gabbay. 2007: 201-211.

Dona Stewart, *Good Neighbourly Relations: Jordan, Israel and the 1994-2004 Peace Process*, 2007: 55-68.

Andrew Martin. "Can Israel Find The Water It Needs." The New York Times. 9 August 2008. 9 November 2008 <<http://www.nytimes.com/2008/08/10/business/worldbusiness/10feed.html>>. (Also watch embedded video on this website "The Risks of Desert Farming").

Gleick, Peter, "Water and Terrorism" in *The World's Water 2006-2007: The Biennial Report on Freshwater Resources*, 2006: 1-25.

Assignment 2 due.

**Environmental Justice and Climate**

**February 19: Earth cycles, the atmosphere, and the cryosphere**

Read Kolbert, Elizabeth (2006). *Field Notes from a Catastrophe: Man, Nature and Climate Change*, 1-67.

Explore "State of the cryosphere: Is the cryosphere sending signals about climate change?" [http://nsidc.org/sotc/glacier\\_balance.html](http://nsidc.org/sotc/glacier_balance.html) (National Snow and Ice Data Center, 4 June 2008).

**February 24: The cryosphere and global warming**

Listen/Watch "Climate Change" <http://www.usgs.gov/corecast/details.asp?ep=2> (USGS CoreCast, Episode 2, 21 Aug 2007).

Read *Visualizing Geology* (2008) Chapter 12, "Earth's Atmosphere."

"The Carbon Cycle" <http://earthobservatory.nasa.gov/Features/CarbonCycle/> (NASA, Earth Observatory).

Listen/Watch "Prehistoric Climate Provides Clues to Future Changes" <http://www.usgs.gov/corecast/details.asp?ep=77>, (USGS CoreCast, Episode 77, 24 Nov 2008).

"Sea level and climate" <http://pubs.usgs.gov/fs/fs2-00/> (USGS Fact Sheet, January 2000).

Receive assignment 3.

**February 26: Climate change and human rights**

Roberts, J. Timmons (2007). "Globalizing Environmental Justice" in *Environmental Justice and Environmentalism: The Social Justice Challenge to the Environmental Movement*, Sandler R. and Pezzullo, P., 285-307.

Oreskes, Naomi (2004) "Beyond the Ivory Tower: The Scientific Consensus on Climate Change" <http://www.sciencemag.org/cgi/content/full/306/5702/1686>? *Science*, 306 (5702) p. 1686.

Listen/Watch "Supreme Court Global Warming Hearings" <http://www.kqed.org/epArchive/R612040900> (Forum with Michael Krasny, KQED Radio, 4 December 2006).

Explore "Inuit Human Rights and Climate Change" <http://www.earthjustice.org/library/background/inuit-human-rights-and-climate-change.html>.

**Environmental Justice and Solid Earth Resources**

**March 3: Renewable and nonrenewable resources in the lithosphere**

Listen/Watch “Why Do Minerals Matter?” <http://www.usgs.gov/corecast/details.asp?ep=62>  
(USGS CoreCast, Episode 62, 5 Sept 2008).

*Visualizing Geology* (2008) Chapter 15, “Understanding Earth’s Resources.”

**March 5: Midterm Exam**

**Spring Break—read *Refuge***

**March 24: Nuclear energy I (power production and weapon manufacture)**

*Visualizing Geology* (2008) Chapter 3, “Numerical Age.”

*Assignment 3 due.*

**March 26: Nuclear energy II (power production and weapon manufacture)**

Watch/Listen “Cleanup on Aisle 9: The Long Lasting Legacy of Nuclear Waste”  
<http://online.wr.usgs.gov/calendar/2008/jun08.html> (Lecture by Dave Stonestrom, USGS Research Hydrologist, 26 June 2008).

***Required Field Trip March 28: American Museum of Natural History. Depart 9 a.m. in front of Ely Hall.***

**March 31: Nuclear energy III (power production and weapon manufacture)**

Read Shrader-Frechette, Kristin (2002) “Native Peoples and the Problem of Paternalism” in  
*Environmental Justice: Creating Equality, Reclaiming Democracy*

LaDuke, Winona (2002) “Nuclear Waste...and Native Land” in *The Winona LaDuke Reader*

LaDuke, Winona (2002) “Red Land and Uranium Mining: How the Search for Energy is Endangering Indian Tribal Lands” in *The Winona LaDuke Reader*.

Watch/Listen *Nuclear Waste: Solutions for the Nuclear Renaissance* (Heritage Foundation forum, 6December 2007). [Watch](#) | [Streaming MP3](#) | [Save MP3](#) | [Details](#)

**April 2: Nuclear energy IV (power production and weapon manufacture)**

Watch *Building Bombs: The Legacy* (1993) Mark Mori and Susan Robinson, directors. (45 minutes.)

Read Kuletz, Valerie (2002) “The movement for environmental justice in the Pacific islands” in *The Environmental Justice Reader: Politics, Poetics, Pedagogy*.

**April 7: Fossil fuels I**

Read *Visualizing Geology* (2008), Chapter 8, “Sedimentary Rocks.”

*Receive assignment 4.*

**April 9: Passover (no class)**

**April 14: Fossil fuels II—petroleum and natural gas**

Read Douglas, Oronto, von Kemedi, Dimieari, Okonta, Ike, and Watts (2005) “Alienation and Militancy in the Niger Delta: Petroleum, Politics, and Democracy in Nigeria,” in *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*.

Read Comfort, Susan (2002) “Struggle in Ogoniland: Ken Saro-Wiwa and the Cultural Politics of Environmental Justice,” in *The Environmental Justice Reader: Politics, Poetics, Pedagogy*.

Watch *Delta Force* (1995), Glenn Ellis, director (running time 52 minutes).

**April 16: Fossil fuels III—petrochemicals**

Wright, Beverly (2005) “Living and Dying in Louisiana’s ‘Cancer Alley’ in *The Quest for Environmental Justice*.

Watch *Town Under Siege* with Ed Bradley (CBS 23 December 1997).

**April 21: Fossil fuels IV—energy policy**

Watch/Listen “[A Conversation on Energy Policy](#)” with Steve Forbes & Peter Huber

Assignment 4 due.

**April 23: Mineral resources I**

Read *Visualizing Geology* (2008) Chapter 2, “Earth Materials.”

Read H. Catherine Skinner and Anthony R. Berger, *Geology and Health*, New York: Oxford, 2003: 1-3, 5-11, 12-14, 25-30.

**April 28: Mineral resources II—asbestos**

Watch/Listen “Disasters, dust, and danger? Using geoscience to help understand whether health risks lurk in particles produced by disasters” <http://online.wr.usgs.gov/calendar/2007/nov07.html> (Lecture by Geoff Plumlee, PhD, USGS Research Geochemist, 15 Nov 2007).

Schwarze, Steve (2007) “The silences and possibilities of asbestos activism: Stories from Libby and beyond” in *Environmental Justice and Environmentalism*.

Nyandu, Mpume (2002) “Fearing Asbestosis” in *Environmental Justice in South Africa*.

**April 30: Mineral resources III—metals**

Watch *At the Edge of Conquest: The Journey of Chief Wai-Wai* (1993) Geoff O’Connor, producer. (Running time 30 minutes.)

Read Gedicks, Al (2005) “Resource Wars against Native Peoples” in *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*.

Madihlaba, Thabo (2002) “The Fox in the Henhouse: The Environmental Impact of Mining on Communities” in *Environmental Justice in South Africa*

Moloi, Dudley (2002) “When Gold Becomes a Nuisance” in *Environmental Justice in South Africa*

**May 5:**      Wrap-up