

**ESCI 321**  
**Environmental Geology: Earth Science and Environmental Justice**

**Fall 2011**

**Class Meetings:      Thursdays 4-6 p.m. Observatory Building 211**

Instructor: Jill Schneiderman

Office: Ely Hall 118B

Office Hours: Mondays and Tuesdays 1-2 p.m. (You are welcome to drop by at other times and with patience you are likely to find me!)

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**Course Description**

This course examines environmental geology from a perspective that foregrounds questions of social justice. This approach differs from traditional methods of pursuing environmental geology in that it seeks to combine an understanding of the Earth System with a consciousness of race, class, and gender discrimination. The course is based on two fundamental premises: all living beings have the right to a clean and safe environment; and there is a connection between human arrogance, environmental exploitation, and social justice. Consideration will be given to the viewpoint that there exists within the United States, as well as globally, a pattern of environmental inequity. Furthermore, we will evaluate the contention that underlying this pattern is not only an historical failure to address corporate greed and governmental corruption, but a basic lack of understanding about the intricacies of the dynamic Earth System that constitutes the planet.

Key topics to be considered include definitions of environmental justice, concepts of violence, geologic time, scientific uncertainty, radioactivity, energy resources, food and soil, flooding, megadams, and climate change.

**Course Pedagogy**

This course is designed as seminar. I organized it around a series of materials that represent some important issues currently being pursued by scholars and activists. The seminar format requires *active* participation by its members. This course is intensive in three ways—writing, reading, and participation. I expect you to be an actively engaged participant in the seminar. This means you will facilitate class discussions, collaborate in group work, plan seminar presentations, and demonstrate initiative in bringing issues to the larger group discussions.

This is the sixth version of a course on earth science and environmental justice that I initially developed under a National Science Foundation curriculum development grant (NSF 9653266). I have modified it under a Center for Contemplative Mind in Society Contemplative Practice Fellowship, more than one hundred fifty of which have been awarded to American college and university teachers over a 12-year period. The course combines the traditional “third-person” learning of a weekly two-hour seminar with the novel “first-person” learning of a brief “meditation exercise.”

The modern Western academy is dominated by what Harold Roth, Professor of Religious Studies at Brown University, has called “third-person” learning. We observe, analyze, record, discuss a variety of subjects at a distance as if they were solely objects and that our own subjectivity that is viewing them doesn’t exist. Of course there are exceptions to this, particularly in the Arts and Humanities, where students may combine academic investigations with direct firsthand experience of what they are studying (e.g. theatre, art, music). But in general, the Natural Sciences prize objectivity.

Through use of a weekly meditation exercise, this course includes an experiment in what Roth calls “critical first-person learning.” Throughout the semester we will read and analyze a variety of work concerning earth science and environmental injustice (“third-person learning”); and we will observe our minds and bodies work while trying out a variety of simple meditation techniques (“first-person learning”) at the end of each meeting. In class, our discussions will be informed by both of our types of learning.

Meditation is a contemplative practice undertaken with the intention of quieting the mind and cultivating deep concentration, calm, and awareness of the present moment. Ideally, the insights that arise from the mind, body, and heart in the contemplative state enhance meaning in our lives. Without a doubt, this kind of novel pedagogy is not for everyone. If, for any reason, there is a student who does not want to participate in the meditation exercise, I will be happy to make arrangements for doing alternate work of equivalent value.

## BOOKS

- Adamson, Joni; Evans, Mei Mei, and Stein, Rachel, *The Environmental Justice Reader*, 2002.  
Albin, Edward, *Earth Science Made Simple*, 2004. (Optional if you have another introductory geology textbook).  
Gottlieb, Robert and Joshi, Anupama, *Food Justice*, 2010.  
Hanh, Thich Nhat, *The World We Have*, 2008.  
McPhee, John, *Basin and Range*, 1980.  
Nixon, Rob, *Slow Violence and the Environmentalism of the Poor*, 2011.  
Roy, Arundhati, *The Cost of Living*, 1999.  
Safina, Carl, *A Sea in Flames*, 2011.  
Shiva, Vandana, *Soil Not Oil*, 2008.  
Wallace, David Foster, *This is Water*, 2009. (Optional. It’s just a beautiful little book to have so that you can read it periodically).

There are also a number of readings that are available on the course Moodle site and films on reserve that can be viewed in the library.

## REQUIREMENTS

1. Attendance and Participation. Remember that this class is a *seminar*; it is not a lecture. Please come prepared to contribute *every* week. To facilitate each week’s discussion, every student (except those leading the discussion) will post two discussion questions on the Moodle site by Wednesday evening at 7 p.m.
2. Critical Commentaries. These are 250-500 words, due at the beginning of class (for weeks 3-7, and 8-11). You can take a “pass” three times during the semester and not submit a commentary during three of those weeks. When you do take a “pass,” you

are to email me one paragraph *before class* in which you state what you found valuable (scientifically, theoretically, politically) about the reading.

3. Two “Dialogue” Papers. By the Friday before October Break and by the Friday after classes end, you will hand in a 1250 word paper in which you put environmental justice theory in dialogue with a the reality of a resource extraction issue. The first paper will be based on the readings from Week 2 (Defining Enviromental Justice) in conjunction with solid earth energy resources. The second one will be based on a contentious issue of the hydrosphere and/or atmosphere in conjunction with Rob Nixon’s book.
4. Presentation/Lead a Class Discussion. In pairs, students will serve as discussion leaders for one particular week, steering us through the assigned readings. Each of you will serve in this role once during the semester.
5. Final Project. This will involve, in part, a book review of Safina’s book (or another one that you choose in consultation with me). I will give you more details later in the semester.
6. Note-card journal. At the end of every class meditation exercise you will record brief comments or observations.

These will count equally when I determine your grade for the seminar:

- Class preparation and participation (Includes leading of class discussion one week)
- Critical Commentaries
- Two “dialogue” papers
- Final Project
- Note-card journal

Note that students much complete all assignments to receive a passing grade. If, due to extraordinary circumstances, you need a significant extension on some of the course work, please see your Class Advisor to receive permission.

#### **ACADEMIC ACCOMMODATIONS**

I am happy to provide academic accommodations for students with learning differences who are registered with the Office of Disability and Support Services (ODSS). I hope that students who need such accommodations, whether registered with the ODSS or not, will schedule an appointment with me early in the semester. Doing so will allow us to discuss any accommodations for this course that have been approved by ODSS, as indicated in your accommodation letter, and consider what we can do together to make your learning experience in this course most rich.

#### **IMPORTANT POLICIES OF THE DEPARTMENT OF EARTH SCIENCE AND GEOGRAPHY**

Class attendance is required; please arrive on time! Be sure to turn off cell phones and other personal communication devices before entering the classroom. Let us respect our time together and make the most of it by eliminating unnecessary distractions.

In-class computer policy: Computers are allowed in class only for purposes of taking notes and viewing course readings. No other documents are to be opened. Web browsers are never to be activated unless the instructor specifically asks you to do so.

## Weekly Materials

### **Week 1 (September 1) Introduction to the course**

David Foster Wallace, *This is Water: Some Thoughts, Delivered on a Significant Occasion, about Living a Compassionate Life* (A speech given by David Foster Wallace at the 2005 Kenyon College commencement ceremony).

Excerpt from *The Activist's Ally: Contemplative Tools for Social Change*.

Watch the opening chapter (first 10 minutes) of *Earthlings* (A documentary about society's treatment of animals, narrated by *Joaquin Phoenix* with soundtrack by *Moby*).

Meditation exercise: Breathing Meditation (5 mins) Diana Winston , Director of the Mindfulness Center, UCLA Mindful Awareness Research Center

### **Week 2 (September 8) Defining Environmental Justice**

Bullard, Robert. "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. (PDF on Moodle)

Di Chiro, Giovanna, "Nature as Community: The Convergence of Environment and Social Justice," In William Cronon (ed.) *Uncommon Ground: Rethinking the Human Place in Nature* (New York: WW Norton, 1996). (PDF on Moodle)

Evans, Mei Mei. "Testimonies," in, Joni Adamson et al. (eds) *The Environmental Justice Reader: Politics, Poetics, Pedagogy*, Tucson: University of Arizona Press, 2002.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (11 February 1994)

Leal, Teresa. "Throwing Rocks at the Sun: An Interview with Teresa Leal," in, Joni Adamson et al. (eds) *The Environmental Justice Reader: Politics, Poetics, Pedagogy*, Tucson: University of Arizona Press, 2002.

Melosi, Martin. "Environmental Justice, Ecoracism, and Environmental History," in Diane Glave and Mark Stoll (eds.) *To Love the Wind and the Rain": African Americans and Environmental History* (Pittsburgh: University of Pittsburgh Press, 2006). (PDF on Moodle)

*Not In My Backyard: Executive Order 12,898 and Title VI as Tools For Achieving Environmental Justice* (U.S. Commission on Civil Rights, Oct 2003) (pages 1-27). (PDF on Moodle)

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

Principles of Environmental Justice (1991).

Meditation exercise: Loving-Kindness Meditation (10 mins) Diana Winston , Director of the Mindfulness Center, UCLA Mindful Awareness Research Center

**Week 3 (September 15) Violence, Peace, and Geologic Time**

Galtung, Johann. "Violence, Peace, and Peace Research," *Journal of Peace Research* 6(3) 1969: 167-191. (PDF on Moodle)

Galtung, Johann. "Cultural Violence," *Journal of Peace Research* 27(3) 1990, 291-305. (PDF on Moodle)

Kiefer, Sue. "The Geologist's Gaze," in Jill Schneiderman (ed.) *The Earth Around Us: Maintaining a Livable Planet*, Westview Press, 2003. (PDF on Moodle)

McPhee, John. *Basin and Range*. 1980. Pages 1-86.

Twain, Mark "Was the World Made for Man" (PDF on Moodle)

Albin, Edward. *Earth Science Made Simple*. 2004 (Chapter 3 on Plate Tectonics)

Meditation exercise: Breath, Sound & Body Meditation (12 mins) Diana Winston , Director of the Mindfulness Center, UCLA Mindful Awareness Research Center

**Week 4 (September 22) Slow Violence, "Scientific Uncertainty," and Geologic Time**

Albin, Edward. *Earth Science Made Simple*. 2004 (Chapter 4 on Geologic Processes; Chapter 5 on Geologic Time)

McPhee, John. *Basin and Range*. 1980. Pages 87 to end.

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Preface and Introduction.

Oreskes, Naomi and Conway, Erik M. "Defeating the Merchants of Doubt," *Nature* 465: 686-687 (June 10, 2010).

Meditation exercise: Introduction to the 4-Part Bell Sound Practice (5 min) and The 4-Part Bell Sound Practice (10 mins). Arthur Zajonc, Professor of Physics, Amherst College and Director, The Center for Contemplative Mind in Society.

## Environmental Justice and the Geosphere

### **Week 5 (September 29) No Class (Rosh Hashanah)**

### **Week 6 (October 6) Minerals, Rocks and Radioactivity**

Albin, Edward. *Earth Science Made Simple*. 2004 (Chapter 1 on Minerals; Chapter 2 on Rocks).

Kuletz, Valerie. "The Movement for Environmental Justice in the Pacific Islands" in, Joni Adamson et al. (eds) *The Environmental Justice Reader: Politics, Poetics, Pedagogy*, Tucson: University of Arizona Press, 2002.

Kuletz, Valerie. *The Tainted Desert: Environmental and Social Ruin in the American West*, New York: Routledge, 1998. Preface and Part I (Chapters 1-4). (PDF on Moodle).

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Chapter 1.

Stonestrom, Dave. "Cleanup on Aisle 9: The Long Lasting Legacy of Nuclear Waste." 2008. (Listen/Watch online; approx. 1 hour lecture)

*The China Syndrome*. 1978. Directed by James Bridges. (121 minutes) (Watch). On reserve at library.

Meditation exercise: Bare Attention Meditation (5 mins) Mirabai Bush , Founding Director, The Center for Contemplative Mind in Society

### **Week 7 (October 13) Coal: Some Costs of Cheap Energy**

*Black Diamonds: Mountaintop Removal and the Fight for Coalfield Justice*. 2006. Directed by Catherine Pancake (72 minutes). (Watch). On reserve at library.

Edmunds, William. 2002. *Coal in Pennsylvania* (2<sup>nd</sup> ed).: Pennsylvania Geological Survey, 4th ser., Educational Series 7, 28 p. (PDF on Moodle)

McQuaid, John. 2009. "Mining the Mountains" *Smithsonian Magazine*.

Reece, Erik. "Moving Mountains: The Battle for Justice Comes to the Coalfields of Appalachia." Orion, Jan/Feb 2006.

Browse website of Energy Justice Network (<http://www.energyjustice.net/ej/>)

Meditation exercise: Loving-Kindness Meditation (10 mins) Mirabai Bush , Founding Director, The Center for Contemplative Mind in Society.

## October Break

### **Week 8 (October 27) — Field Trip to the Jewish Farm School in Putnam Valley**

Gottlieb, Robert and Joshi, Anumpama. *Food Justice*, Cambridge, MA: MIT Press, 2010

Prior to our field trip in Week 8, please attend the screening of “Dirt: The Movie” on Tuesday October 25 in Ely Hall 200 and the lecture by Dr. Salvatore A. Engel-Di Mauro on Wednesday evening October 26. Also, prior to Dr. Engel-Di-Mauro’s talk, read his paper “From organism to commodity: gender, class, and the development of soil science in Hungary 1900-1989.” *Environment and Planning D: Society and Space* 2006, volume 24, pages 215-229.

### **Week 9 (November 3) — Oil**

Colorado Geological Survey. “Oil” Rock Talk Volume 7, Number 2. (PDF on Moodle).

Comfort, Susan. “Struggle in Ogoniland: Ken Saro-Wiwa and the Cultural Politics of Environmental Justice” in, Joni Adamson et al. (eds) *The Environmental Justice Reader: Politics, Poetics, Pedagogy*, Tucson: University of Arizona Press, 2002.

*Delta Force*. 1995. Directed by Glenn Ellis (52 minutes). (Watch). On reserve at library

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Chapters 2 and 3.

Meditation exercise: Breath and Sound Meditation (10 mins) Mirabai Bush , Founding Director, The Center for Contemplative Mind in Society.

### **Week 10 (November 10) — Soil, Trees, and Gender**

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Chapter 4.

Shiva, Vandana. 2008. *Soil Not Oil*.

Soil Science Society of America. “Soils Overview” (PDF on Moodle).

Verchick, R.M. Robert. “Feminist Theory and Environmental Justice” in Stein, Rachel (ed.) *New Perspectives on Environmental Justice: Gender, Sexuality, and Activism*. 2004. Rutgers University Press.

Meditation exercise: Breathing Meditation (5 mins) Diana Winston , Director of the Mindfulness Center, UCLA Mindful Awareness Research Center

## Environmental Justice and the Hydrosphere

### **Week 11 (November 17) Hurricane Katrina and Environmental Justice**

Watch: *When the Levees Broke: a requiem in four acts*. 2006. Directed by Spike Lee (on reserve in the library) (3 discs; total running time 255 minutes).

Fischetti, Mark. "Drowning New Orleans." October 2001. *Scientific American*. Available at: <http://www.scientificamerican.com/article.cfm?id=drowning-new-orleans-hurricane-prediction>.

Fischetti, Mark. "Protecting New Orleans." February 2006. *Scientific American* **294**, 64-71 (February 2006). (PDF on Moodle).

Smith, Neil. "There's No Such Thing as a Natural Disaster." From Social Science Resource Council website on Understanding Katrina. Available at <http://understandingkatrina.ssrc.org/Smith/>, published on June 11, 2006.

Jackson, Stephen. Un/Natural Disasters, Here and There. ." From Social Science Resource Council website on Understanding Katrina. Available at <http://understandingkatrina.ssrc.org/Jackson/>, published on June 11, 2006.

Oliver-Smith, Anthony. Disasters and Forced Migration in the 21st Century. From Social Science Resource Council website on Understanding Katrina. Available at <http://understandingkatrina.ssrc.org/Oliver-Smith/>, published on June 11, 2006.

Sze, Julie. "Toxic Soup Redux: Why Environmental Racism and Environmental Justice Matter after Katrina." Available at <http://understandingkatrina.ssrc.org/Sze/>, published on June 11, 2006.

Meditation exercise: Loving-Kindness Meditation (10 mins) Diana Winston , Director of the Mindfulness Center, UCLA Mindful Awareness Research Center

### **Week 12 (November 25) Give Thanks!**

No class

### **Week 13 (December 1)**

Gather to sit during class time (JSS away this week)

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Chapters 7 and 8.

Meditation exercise: Introduction to the 4-Part Bell Sound Practice (5 min) and The 4-Part Bell Sound Practice (10 mins). Arthur Zajonc, Professor of Physics, Amherst College and Director, The Center for Contemplative Mind in Society.

### **Week 14 (December 8) Megadams**

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Chapter 5 and 6.



Roy, Arundhati. 1999. *The Cost of Living*. 1999. New York: Modern Library.

Watch: *Drowned Out*. 2004. Directed by Franny Armstrong. Running Time 75 minutes.

Meditation exercise: Breath, Sound & Body Meditation (12 mins) Diana Winston , Director of the Mindfulness Center, UCLA Mindful Awareness Research Center

## **Environmental Justice and the Atmosphere**

### **Week 15 (December 15) Climate Justice**

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Epilogue.

Thich Nhat Hanh *The World We Have*.

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).

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

“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).

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. (PDF on Moodle).

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>.

Precautionary Principle

Browse website of Environmental Justice and Climate Change Initiative.

Meditation exercise: Loving-Kindness Meditation (10 mins) Mirabai Bush, Founding Director,  
The Center for Contemplative Mind in Society.