

## **GEOL 352 Environmental Geology Seminar, 2008**

Course number: 10741

Tuesday, 7:00 to 9:30 pm (first meeting, January 22)

Room 316, Delehanty Hall, Trinity Campus

Our world is facing a slew of environmental issues for which the understanding of Earth as a system is critical to crafting meaningful and workable solutions. Global warming, the world-wide modification of our landscapes, and the dispersion of persistent pollutants including organic chemicals and heavy metals are just a few of the environmental issues for which a global perspective and an appreciation of deep time and geologic principals are important. In this seminar, we will read and discuss works by a variety of authors interested in the health of our planet.

We will read books including those written by Ruddiman suggesting that humans have changed climate for millennia, by Lovelock implying that we are destroying Gaia's self-regulation that has maintained Earth for eons, and by Weisman who contemplates Earth without people. We'll examine articles by Hooke suggesting that humans are now the premier force shaping Earth's surface and by Broker suggesting our actions have the power to change global oceanic circulation. As the semester progresses, those of us in the class will select other related readings for discussion.

Our evenings will be spent not only considering the science but focusing on the moral and ethical dilemmas of being a practicing scientist in the first decade of the 21<sup>st</sup> century. How do we reconcile doing curiosity-driven science with the need to understand and approach globally threatening issues? How do we all lead our lives as ethical, global, citizen-scientists in the 21st century?

This seminar is appropriate for graduate students in any science or engineering program.

The following are required books for the class and are available on-line or in local booksellers:

*William F. Ruddiman, Plows, Plagues and Petroleum: How Humans Took Control of Climate. ISBN: 0-691-12164-8.*

*Alan Weisman, World Without Us. ISBN- 0312347294*

*James Lovelock, The Revenge of Gaia: Earth's Climate Crisis and the Fate of Humanity. ISBN-046504168X*

### Class grading

The class will be graded based on preparation for and participation in each class.

### The structure of the class is straightforward.

Each week we will read a section of a book and one (and only one) scientific paper related to the book section. For the first couple weeks, I have picked the papers; after that, we will rotate paper selection. Each week, there will be two leaders whose job it will be to pick the paper by the week and encourage the week's discussion. I will take on this job for the first three weeks, then, we will rotate.

### Expectations for the class are simple.

Read all the papers and spend some time thinking about both the scientific and ethical issues they raise before coming to class.

### Course goals are three-fold.

1. To read, understand, critique, and discuss current non-fiction literature that deeply involves the Earth Sciences in environmental problems of global importance.
2. To learn more of the science underlying large-scale environmental problems by reading papers and engaging in guided discussion.
3. To shape for yourself an ethical and moral framework in which to consider the work we do day to day as scientists in the context of global environmental problems.

Each week, the leader should bring snack/dessert/milk for coffee. I will supply the espresso machine.