

Environmental Geology: Humans and Nature
Geol 106/ Anth 116, Spring 2012
Braunstein, Room 201
MWF 11:00-11:50

Instructor: Dr. Brooke Crowley
Email: brooke.crowley@uc.edu
Phone: 513-556-2733
Office Hours: Monday 12-1 pm & Wed 3-4 pm, Anthropology Room 472 or by appointment
Email: brooke.crowley@uc.edu

TA: Julia Wise
Email: wiseju@mail.uc.edu
Office Hours: Tuesday 10-11 am & Thursday 2-3 pm, Geology Room 616

Course website: <http://blackboard.uc.edu>

We are living in an age of increasing technology and consumption combined with increasingly fewer resources. Every day our nation is faced with decisions that will impact both our own lives and the future of our planet. We are also faced with personal decisions that can collectively make a significant positive or negative impact on the increasingly stressed environment.

How did we come to be in this situation? Are human impacts on the natural world a new phenomenon? What does the future hold for our country? Our species? How can we insure that we will continue to lead healthy lives in a healthy world?

Each and every one of us has the potential to make a difference. Because we have become increasingly removed from growing our own food, making our own clothes, and creating our own shelter, it is easy to underappreciate our own impacts. In this course we will discuss the origins and environmental impacts of anthropogenic activities such as agriculture, animal husbandry, urbanism, and mining. We will focus on current social and environmental issues that emphasize the links between raw materials, waste, and products used in day-to-day life.

Learning Objectives:

Upon completion of this course, you will be able to:

- Describe the geologic, hydrologic, and carbon cycles.
- Compare and contrast the impacts of human activities on the environment over the course of our most recent geologic epoch, the Anthropocene.
- Discuss both the costs and benefits of continuing technological development.
- Explain why we should be moving beyond fossil fuel resources and describe the benefits and disadvantages of various alternative Energy Resources.
- Be knowledgeable in how to minimize your ecological footprint.

POLICIES

Class Format:

Classes will be lecture based. However, students will frequently be asked to answer thought questions (either out loud or in writing), and to discuss topics in small groups. Lectures will be posted on BB prior to each class.

Attendance and Participation:

You are expected to attend class and participate. Read assigned readings prior to each class. I will gauge attendance by periodically incorporating group discussions, informal writing assignments, and pop quizzes. Do not come late or leave early.

Food:

Please be considerate of others. Do not eat aromatic food like french fries. Clean up after yourself. If I find messes, I will not allow food.

Cell Phones:

Turn off your cell phones. If your phone goes off in class, it will be noted in your file. If I catch you texting, I will keep your cell phone at the front of the room until class is over.

Withdrawal:

Know your deadlines (http://www.uc.edu/registrar/calendars/spring_2012_dates_deadlines.html). Students may drop this course up until April 9, 2012. Students may then withdraw from the course with a “W” grade until May 22, 2012. Withdrawal may be done either online at <http://www.onestop.uc.edu> or by a drop slip signed by the instructor.

Academic Dishonesty:

Academic misconduct will be dealt with in accordance with University Judicial Affairs (http://www.uc.edu/conduct/Academic_Integrity.html).

Computer Skills:

I expect that all students will be proficient in the following skills:

- Ability to access the Internet using a web browser (e.g., Google)
- Ability to use email
- Ability to use a word processor. You are strongly advised to have access to Microsoft Office.

Special Needs:

If you have a disability (e.g., visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability, etc.) which may influence your performance in this course, you must meet with the Disability Services Office (DSO) to arrange for reasonable accommodations to ensure an equitable opportunity to meet all the requirements of this course. If you require accommodations due to disability, please contact DSO at 513-556-6823, Campus Location: 210 University Pavilion. You will be provided an Accommodation Form indicating your accommodation needs for the quarter. Please present this form to me *AS SOON AS POSSIBLE* to ensure your accommodation needs are discussed, agreed upon, and provided.

EXAMS & GRADING

25% Exam 1

- 25% Exam 2
- 5% Ecological Footprint Exercise
- 5% Water Use Exercise
- 10% Life Cycle Analysis
- 10% Journal on Waste
- 10% Reflection on Journal
- 10% Attendance and Participation (assessed by pop quizzes, completed film guides, and responses to thought questions or discussions)

* Students with documented learning disabilities who require special consideration in class or on exams are asked to discuss their needs with me at the start of the term.

COURSE MATERIALS (Available at the Bookstore)

Required:

McPhee, J. (1980) *Encounters with the Archdruid*. Farrer, Straus, and Giroux, 245 pages. ISBN-10: 0374514313.

Redman, C.L. (2001) *Human Impact on Ancient Environments*. University of Arizona Press, 288 pages. ISBN-10: 0816519633.

Recommended:

Hill, M.K. (2010) *Understanding Environmental Pollution*, 3rd Edition. Cambridge University Press, UK.

Additional readings will be posted on BB.

SCHEDULE

**** This syllabus is subject to change with appropriate prior notification****

Week 1

Monday, March 26 – Introduction

Reading:

Kolbert, E. (2011) Age of Man. National Geographic. March Issue.

<http://ngm.nationalgeographic.com/2011/03/age-of-man/kolbert-text>

Hill, M.K. (2010) “Chapter 1: Understanding Pollution” (Section 1) In *Understanding Environmental Pollution*, pp. 1-8.

Redman, C.L. (2001) “Chapter 1: Lessons from a Prehistoric Eden” In *Human Impact on Ancient Environments*, pp. 3-14.

Wednesday, March 28 – Geologic Time

Reading:

Keller, E. (2011) “Chapter 1: Philosophy and Fundamental Concepts” (Section 1.1) In *Environmental Geology*, pp. 4-7.

Friday, March 30 – Introduction to the Water Cycle

Readings:

Keller, E. (2011) “Chapter 12: Water Resources” (Sections 12.1- 12.4) In *Environmental Geology*, pp. 344-352.

Week 2

Monday, April 2 – Introduction to Climate

Reading:

Keller, E. (2011) “Chapter 16: Global Climate Change” (Sections 16.1-16.4), In *Environmental Geology*, pp. 474-490.

Wednesday, April 4 – Climate Change

Reading:

Keller, E. (2011) “Chapter 16: Global Climate Change” (Sections 16.5-16.6) In *Environmental Geology*, pp. 490-503.

Friday, April 6 – Introduction to Soils

Reading:

Keller, E. (2011) “Chapter 3: Soils and Environment” (Sections 3.1 through 3.7) In *Environmental Geology*, pp. 64-78. *Don’t read “Putting Some Numbers on” section pp. 72-75*.

Week 3

Monday, April 9 –Biodiversity and Nature

Reading:

McPhee, J. (1980) “An Island” In *Encounters with the Archdruid*.

Wednesday, April 11 – Video “How the Earth Made Us: Water”

<http://www.youtube.com/watch?v=gYM5hBWZfwQ>

Friday, April 13 – Video “How the Earth Made Us: Wind”

<http://www.youtube.com/watch?v=Ev-gP2vpwzU&feature=related>

Week 4

Monday, April 16 – Humans and Plants

Readings:

Redman, C.L. (2001) “Chapter 3: Concepts that organize our thoughts” In *Human Impact on Ancient Environments*, pp. 35-51

Redman, C.L. (2001) “Fundamentals and Implications of Agriculture” In *Human Impact on Ancient Environments*, pp. 90-95.

Wednesday, April 18 – Humans and Animals

Readings:

Redman, C.L. (2001) "Chapter 4: Animal Exploitation" In *Human Impact on Ancient Environments*, pp. 53-80.

Friday, April 20 – Humans and Soil

Readings:

Keller, E. (2011) "Chapter 3: Soils and Environment" (Sections 3.8-3.12 & Summary) In *Environmental Geology*, pp. 78-87 & 89-90. *Do not read Section 3.13*

Redman, C.L. (2001) "Chapter 5: The Impact of Agrarian Systems" In *Human Impact on Ancient Environments*, pp. 81-90, 95-110, & 122-126.

Week 5

Monday, April 23 – Urban Living Part 1 – Human Population and Health

Reading:

Keller, E. (2011) "Chapter 1: Philosophy and Fundamental Concepts" (Section on population growth) In *Environmental Geology*, pp. 9-13. *Do not Read "Putting some numbers on" p. 11*

Sullivan, R. (2004) "Plague", In *Rats: Observations on the History and Habitat of the City's Most Unwanted Inhabitants*. Bloomsbury, New York, pp. 136-144.

Sullivan, R. (2004) "Plague in America" In *Rats: Observations on the History and Habitat of the City's Most Unwanted Inhabitants*. Bloomsbury, New York, pp. 153-163.

Redman, C.L. (2001) "Disease and Community Health" and "Community Nutrition" In *Human Impact on Ancient Environments*, pp. 173-178.

Graded Assignment:

Keep a Journal of what you buy and throw away this week.

Wednesday, April 25 – Urban Living Part 2 - Environmental Impacts

Reading:

Redman, C.L. (2001) "Ancient industry and Trade", "Hierarchical government", and "A failed experiment" In *Human Impact on Ancient Environments* pp. 179-191.

Graded Assignment:

Calculate your ecological footprint using <http://myfootprint.org/>. If everyone on the planet lived your lifestyle, how many Earth's would you need?

Friday, April 27 – Video "Land of Plenty Land of Want"

Reading:

Redman, C.L. (2001) "Chapter 6: The growth of world urbanism" In *Human Impact on Ancient Environments*, pp. 127-158.

Week 6

Monday, April 30 – EXAM I

Wednesday, May 2 – Introduction to Rocks and Minerals

Keller, E. (2011) “Chapter 2: Earth Materials and Processes” (snippets) In *Environmental Geology*, pp. 28-34, 38-39, & 41. *Do not read “A closer look”, pp. 33-34*

McPhee, J. (1980) “A Mountain” In *Encounters with the Archdruid*. (for both Wed. and Friday)

Friday, May 4 – Mineral Resources

Reading:

Keller, E. (2011) “Chapter 14: Mineral Resources and Environment” (Sections 14.1, 14.3 [part], & 14.4-14.5) In *Environmental Geology*, pp. 403-407, 419-423, & 426-427.

Week 7

Monday, May 7 – Energy Resources Part 1– Fossil Fuels

Reading:

Keller, E. (2011) “Chapter 15: Energy Resources” (Sections 15.1-15.5) In *Environmental Geology* pp. 430-452. *Do not read “A closer look” pp. 431-433*

Bateman, C. (2010) A colossal fracking mess. Vanity Fair. July Issue.

<http://www.vanityfair.com/business/features/2010/06/fracking-in-pennsylvania-201006?currentPage=all>

Wednesday, May 9 – Humans and Water Part 1 – Water Usage and Contamination

Reading:

Keller, E. (2011) “Chapter 12: Water Resources” (Sections 12.4-12.9) In *Environmental Geology*, pp. 352-370.

Do not read “Putting some numbers on” (pp. 354-355) or Long Island Case History (p. 356)

Graded Assignment:

Using the Chicago Field Museum’s water use calculator

(<http://watercalculator.fieldmuseum.org/watercalculator>), calculate how much water you use in a day.

Friday, May 11 – Humans and Water Part 2 – Controlling and Transporting Water

Reading:

Keller, E. (2011) “Chapter 2: Earth Materials and Processes” (Case History) In *Environmental Geology*, pp. 54-55.

McPhee, J. (1980) “A River” In *Encounters with the Archdruid*.

Week 8

Monday, May 14 – The Energy-Water Collision

Reading:

Union of Concerned Scientists (2010) “The Energy Water Collision, 10 Things You Should Know”

Union of Concerned Scientists (2011) “The Energy Water Collision, Power and Water at Risk”

Wednesday, May 16 –Guest Lecture by Dr. Amy Townsend-Small

Friday, May 18 –

Energy Resources Part 2 – Alternative Energy Sources

Reading:

Keller, E. (2011) “Chapter 15: Energy Resources” (Sections 15.6-15.10) In *Environmental Geology* pp. 452-471. *Do not read “A closer look” pp. 453-454*

Week 9

Monday, May 21 – Waste

Reading:

Hill, M.K. (2010) “Chapter 11: Solid Waste” (Sections 1 and 3) In *Understanding Environmental Pollution*, pp. 311-313, 343-346.

Wednesday, May 23 – Waste Solutions

Hill, M.K. (2010) “Chapter 11: Solid Waste” (Section 2) In *Understanding Environmental Pollution*, pp. 313-342.

Graded Assignment:

Make a “Life Cycle Analysis” for an item you use (e.g., a battery, an apple, a light bulb, an ipod).

Friday, May 25 – Video “How the Earth Made Us: Human Planet”

Week 10

Monday, May 28 – NO CLASS. Memorial Day

Wednesday, May 30 – The Future

Reading:

Redman, C.L. (2001) “Chapter Eight: The past as prologue” In *Human Impact on Ancient Environments*, pp. 195-219.

Graded Assignment:

Revisit your “consumption” journal from earlier this term. Have you changed your habits? If so, how? Why or why not?

Friday, June 1 – Exam II