

Introduction to Environmental Science

Lecture: T TH 12-12:50am in BH 105

Lab: F 2-4:50pm in BH 109 or 307

PROFESSORS

Dr. Chris Habeck (Biology)

Boehm 113

610-483-4318

habeck@kutztown.edu

Office Hours:

M 10:00 am – 11:00 am

T 9:00 am – 11:00 am

W 9:00 am – 11:00 am

Dr. Jacob Sewall (Geology)

Boehm 422

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Office Hours:

M 10:00 – 12:00 pm

W 10:00 – 12:00 pm

T 4:00 – 5:00 pm

Dr. Julie Palkendo (Chemistry)

Boehm 316

610-483-4442

palkendo@kutztown.edu

Office Hours:

M & W 12:30 – 1:30 pm

T 1:00 – 3:00 pm

F 10:15 – 11:15 am or by appt

Required Textbook

Withgott, J. and M. Laposata. 2012. Essential environment: the science behind the stories. 5th Edition. San Francisco: Pearson Benjamin Cummings.

Course Philosophy & Objectives

Humans are an integral part of the Earth's environment: we rely on the environment for our basic needs, and our actions directly impact the environment (and, therefore, us). Thus, it's easy for us to argue that this class—and your major—is one of the most important on campus!

The class is co-instructed by a biologist, a geologist and a chemist, so the topics are divided accordingly to primarily introduce subjects that will be covered in the 200-level environmental science classes. However, environmental science is a fundamentally interdisciplinary subject, and within each of these units we will be touching on environmental ethics, justice, policy, law, economics, and other disciplines that are part of environmental science.

This course is not designed to cover all aspects of environmental issues—the class is much too short for that. And it is not designed to cover basic skills and knowledge in science (scientific method) or specific scientific disciplines (biology, chemistry, geology)—you receive that information in the other introductory classes. Rather, this class is designed to introduce you to some fundamental concepts of environmental science, expose you to processes and places that manage and influence our environment, and provide a forum for discussing environmental issues. You will learn environmental problem-solving skills and apply them to environmental issues in our surrounding community. Ultimately, we hope you leave this class equipped with some information about environmental issues facing our community and world, and inspired to do something about it.

Upon successful completion of this course you should be able to:

1. Differentiate between environmental science, ecology and environmentalism.
2. Distinguish between the causes and effects of environmental deterioration.
3. Discuss the role of the ecological interactions in environmental science.
4. Apply the fundamentals of population biology to population analysis and human population growth.
5. Discuss the ethical premises of exploitationism, traditional conservationism, preservationism, and Leopoldian stewardship and attempt to develop a personal environmental philosophy.
6. Discuss and differentiate non-renewable and renewable energy sources.
7. Describe basic soil types and the processes effecting their formation and erosion.
8. Discuss the exploration, production, transportation and environmental impact of fossil fuels.
9. Describe basic chemical reactions relevant to environmental problems.
10. Discuss the environmental effects caused by industrial, agricultural and mining processes.
11. Recognize the environmental impact of the disposal of solid and hazardous wastes.

Tentative Grading

Grades in this course will be based on the items listed below. Specific details on the format and expectations for exams will be provided by each instructor. Please let us know if there are problems with participation in group work—taking credit for work that is not your own is considered a violation of academic honesty (see below).

| Graded Items | Percent |
|-------------------------------|---------|
| Exams (3) | 50 |
| Labs and Assignments (~12) | 30 |
| Sustainability Projects | 15 |
| Participation | 5 |
| Total | 100 |

Grading Scale:

A: $\geq 93\%$ **and completion of all work**

A-: 90-92%

B+: 87-89%

B: 83-86%

B-: 80-82%

C+: 77-79%

C: 70-76%

D = 60-69%

F = $<60\%$

Attendance & Late Policy

Attendance is expected for all lectures and lab activities. The material covered and emphasized in class will be the basis for the exams, and therefore attendance is critical to succeed in this class. Absences from lecture and lab will be reflected in your participation grade (which is determined at your instructors' discretion). Make-up exams and assignments will be given *only* by prior arrangement or in the case of genuine, officially documented emergencies. **Late assignments will be graded with a 10% penalty for each calendar day the work is late and will not be accepted if more than one week overdue. Missed exams will also be graded with a 10% penalty for each calendar day that the instructors are not contacted. You forfeit the opportunity to make-up the exam if you do not contact any instructor within five calendar days of the original exam date.**

Etiquette & Expectations

You are expected to be courteous and respectful of everyone in the class throughout the semester. When one person is talking, you should be quiet and attentive. Showing up to class late or leaving early is a disruption to the class and will result in a deduction of points. Cell phones should be turned off and put away during class. Use of cell phones for any reason during class will result in penalty of an unexcused attendance. At numerous times during the semester, we will be listening to guest speakers and touring outside facilities. Please be courteous, respectful, and engaged during the tours and presentations. If we witness disruptive behavior or any disrespect to people or nature, you may lose points for the lab.

Academic Honesty

Strict accordance with the University policies concerning plagiarism, cheating, etc. is expected. This does not preclude discussing readings and assignments – we do want you all talking and bouncing ideas off one another! However, all work that is turned in must be your own unless we explicitly state that collaboration on a project is expected. If collaboration occurs, then all contributors must be properly acknowledged. Failure to acknowledge the work of others is considered academic dishonesty (see <http://conduct.dept.kutztown.edu/acadhonesty.aspx>); all students involved in a case of academic dishonesty will either fail the assignment or fail the course. Additionally, any information used in an oral or written presentation that is not from your own original research or is not likely to be common knowledge among your audience must be cited. 100% academic integrity is expected at all times.

Communication

Feel free to contact us with any questions or concerns about the course. We welcome the opportunity to discuss environmental science, research, internships, careers, and life with you! You can contact us most easily via e-mail or in person during our office hours. Periodically, we may email the entire class to

address logistical or other issues outside of class. For these communications, we will send an email to your KU e-mail address. If you do not use KU e-mail for your e-mail, please configure your e-mail to forward all KU messages to your preferred e-mail provider. D2L will be used as a repository for all pertinent information (syllabus, readings, grades) in this course.

Support Services

If you have already disclosed a disability to the Disability Services Office (215 Stratton Administration Building) and are seeking accommodations, please feel free to speak with us privately so that we may assist you. If you have an injury sustained during military service including PTSD or TBI, you are also eligible for accommodations under the ADA and should contact the Disability Services Office.

Beyond the Classroom

We encourage you to become active in environmental issues on campus and/or in the surrounding community. If you're not already a member, consider joining the Environmental Action Club, an organization that sponsors environmentally-related volunteer activities. There are also many local non-profit organizations that can always use help—please come chat with us if you are looking for volunteer, internship, or research opportunities!

Although this is an introductory class, it is never too early to start considering internships and career options in your field. Some of the better websites with useful information include:

Society for Conservation Biology – <http://www.conservationbiology.org/jobs/>

Conservation Job Board – <http://www.conservationjobboard.com/>

Environmental Career Opportunities – <http://www.ecojobs.com/>

Ecological Society of America – http://www.esa.org/careers_certification/employment.php

EcoEmploy – <http://www.ecoemploy.com/jobs/>

Ecolog listserv archives – <https://listserv.umd.edu/archives/ecolog-l.html>

Texas A&M's Wildlife & Fisheries job board – <http://wfscjobs.tamu.edu/job-board/>

You may also want to directly explore the websites of some governmental (e.g. National Park Service, U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service) and non-governmental (e.g., The Audubon Society, The Nature Conservancy, Sierra Club, The World Wildlife Fund, Defenders of Wildlife) environmentally-related national and international organizations. If you are interested in working for Pennsylvania's Department of Environmental Protection, you will likely have to take the State Civil Service exam before applying to jobs or internships, so start thinking about this early. We encourage you to explore the world of opportunities available to you, and ask us if you seek specific advice.

| | Date | | Probable Topic | Lecturer | Chapter |
|-----|------|--------|---|----------|---------|
| 1 | T | 23-Jan | Intro & Interdisciplinary Perspectives of Env Sci | all | |
| 2 | Th | 25-Jan | Environmental Science: Scope & Purpose | Habeck | 1 |
| L1 | F | 26-Jan | Sustainability Project Introduction | all | |
| 3 | T | 30-Jan | Overview of Ecological Concepts | Habeck | 3,4 |
| 4 | Th | 1-Feb | Environmental Economics | Habeck | 5 |
| L2 | F | 2-Feb | Environmental Issues Survey | Habeck | |
| 5 | T | 6-Feb | Greenhouse Gases & Combustion Rxns | Palkendo | 14 |
| 6 | Th | 8-Feb | Climate Change: Physical Factors & History | Sewall | 14 |
| L3 | F | 9-Feb | KU Steam Plant | Sewall | |
| 7 | T | 13-Feb | Climate Change: Present & Future | Sewall | 14 |
| 8 | Th | 15-Feb | Human Evolution & Climate Change | Habeck | 14 |
| L4 | F | 16-Feb | Climate Change & Species Phenology | Habeck | |
| 9 | T | 20-Feb | Exam 1 | Sewall | |
| 10 | Th | 22-Feb | Air Pollutants: Part I | Palkendo | 13 |
| L5 | F | 23-Feb | KU Air Monitoring Station and Emissions | Palkendo | |
| 11 | T | 27-Feb | Air Pollutants: Part II & Acid Rain | Palkendo | 13 |
| 12 | Th | 1-Mar | Fossil Fuels | Sewall | 15 |
| L6 | F | 2-Mar | Sustainability Project Work Day | all | |
| 13 | T | 6-Mar | Nuclear Rxns & Radioactivity | Palkendo | 15 |
| 14 | Th | 8-Mar | Nuclear Power | Sewall | 15 |
| L7 | F | 9-Mar | Radioactivity Lab | Palkendo | |
| | T | 13-Mar | SPRING BREAK | | |
| | Th | 15-Mar | SPRING BREAK | | |
| | F | 16-Mar | SPRING BREAK | | |
| 15 | T | 20-Mar | Alternative Energy | Sewall | 16 |
| 16 | Th | 22-Mar | Municipal Waste | Sewall | 17 |
| L8 | F | 23-Mar | Service Learning - Trash Clean-up | Sewall | |
| 17 | T | 27-Mar | Global Biodiversity | Habeck | 8 |
| 18 | Th | 29-Mar | Restoration Ecology | Habeck | 9 |
| L9 | F | 30-Mar | Lehigh Gap Nature Center Field Trip | Sewall | |
| 19 | T | 3-Apr | Exam 2 | Palkendo | |
| 20 | Th | 5-Apr | Pesticides & Environmental Health | Palkendo | 7, 10 |
| L10 | F | 6-Apr | Pesticide Analysis | Palkendo | |
| 21 | T | 10-Apr | Agriculture & Soils | Sewall | 7 |
| 22 | Th | 12-Apr | Ecology & Economics of Invasive Species | Habeck | |
| L11 | F | 13-Apr | Field Margins Project | all | |
| 23 | T | 17-Apr | Land Use/Cover & Human Footprint | Sewall | 9, 18 |
| 24 | Th | 19-Apr | Watershed Ecology | Habeck | p 21-22 |
| L12 | F | 20-Apr | Watershed Assessment | Habeck | |
| 25 | T | 24-Apr | Water Quality Indicators | Palkendo | 12 |
| 26 | Th | 26-Apr | Water Pollutants & Treatments | Palkendo | 12 |
| L13 | F | 27-Apr | Wastewater Treatment Plant Field Trip | Palkendo | |
| 27 | T | 1-May | Water Resources | Sewall | 12 |
| 28 | Th | 3-May | Wrap Up | all | |
| L14 | F | 4-May | Sustainability Presentations | all | |
| 29 | T | 8-May | Exam 3 at 8 AM | Habeck | |