

ENV 102—Introduction to Environmental Science

Autumn quarter, 2008

Logistics

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Office hours: Monday & Wednesday 10:00–11:00 am, Tuesday 9:00–10:00 am, or by appointment

Textbook (required): *Essential Environment*, 2ed, Withgott & Brennan, ISBN 978-0-8053-0640-8

iClicker (required): Purchase at bookstore and bring to every class meeting (see attendance policy).

Lab manual: Available for download as PDF files from the Blackboard site

Course overview

The primary goals of this course are (1) to provide you with the intellectual tools to evaluate the environmental challenges that our society faces and (2) to understand the methods and processes that scientists employ to advance human knowledge. Drawing on the disciplines of biology, ecology, chemistry and physics, we will explore the how human activities impact the natural environment and in turn how modern society depends on ecosystem services. We also will focus on policy responses to current environmental issues and consider several case studies where regulation led to problems being 'solved.' Our discussion will be guided by considering the four earth spheres (atmosphere, hydrosphere, lithosphere and biosphere) and the interrelationships (i.e., material and energy cycles) between each and humans. In each instance, we will employ a geographical perspective to understand how different human impacts span local, regional and global spatial scales. Please also note the expected learning outcomes below.

Course philosophy

We will strive to have an interactive discussion on the topics addressed in this class. One lesson of environmental science is the impact that each of us has on the environmental sustainability of our planet, and the diverse student population at DePaul will help us to understand how different ways of living (e.g., urban versus suburban) change this impact. Also, science is very difficult to learn passively; classroom discussion promotes active learning. We will also use iClickers (see below) to foster an interactive learning environment.

Policies

Academic Integrity: According to the DePaul University [Student Handbook](#), "Violations of academic integrity include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources, alteration or falsification of academic records; academic misconduct; and complicity." The Handbook also states that, "If an instructor finds that a student has violated the Academic Integrity Policy, the appropriate initial sanction is at the instructor's discretion." For more information, definitions, and examples, see DePaul University's Academic Integrity website at <http://academicintegrity.depaul.edu>.

iClickers/quizzes: The iClicker system will be used to take attendance, provide feedback during lectures, and for quizzes. Once per week, the class will start with a short quiz (approximately 5–7 questions/10 minutes) based on assigned reading and material covered in previous lectures. Completion of this quiz will also count as attendance for that class. On days without quizzes, questions will be peppered throughout the lectures. Although these questions will not be graded, they must be completed to receive credit for attendance. Since this will be my first experience with the iClicker system, we may collectively decide to make modifications to this system.

Class mid-quarter evaluation: As a new faculty member at DePaul, I am particularly interested in student feedback. In addition to the standard end of the quarter evaluation, I will conduct a mid-quarter evaluation to look for ways to improve both the content and delivery of this course. Also, I will focus on your evaluation of the iClicker system.

Blackboard: All class materials and grades will be available on the Blackboard site. I will post all lectures on the Blackboard site within 24 hours after the class.

Attendance: Attendance is required for all classes. Students will be allowed to miss two classes without penalty during the quarter. This should cover all ‘routine’ absences such as colds, doctor appointments, competitions, etc. Further excused absences will only be granted in exceptional circumstances with appropriate documentation. After the first two absences, 0.5 points for each missed class will be taken off your final grade. Attendance will be taken using the iClickers (see below). Exams must be taken at the scheduled time. Any exceptions to this policy must be arranged in advance.

Late assignments: All assignments are due at the beginning of class. Late assignments will receive half credit if received within one week (except at the end of the semester—nothing will be accepted after the final class).

Ecological footprint exercises

All homework will be based on the Calculating Ecological Footprints exercises at the end of the book chapters. These individual footprint exercises will be combined into a graphical project (details will be presented towards the end of the semester). This quantitative project also serves to fulfill the requirements of the Scientific Inquiry quantitative requirement.

Grading

Grades in this class will be determined on the following scale:

>=93	92–90	89–87	86–83	82–80	79–77	76–73	72–70	69–67	66–60	<60
A	A-	B+	B	B-	C+	C	C-	D+	D	F

I may change these grade boundaries, but this will always be in favor of the students and will be applied uniformly to the entire class. Grades will be determined from the individual components of the course by the following allocation:

Final exam	Midterm exam	Homework	Attendance/quizzes	Labs
25%	15%	20%	10%	30%

Sources of help

If you think you may have special learning needs, please feel free to see me as soon as possible, and every effort will be made to reasonably accommodate your needs.

- **PLuS Program:** for students with learning disabilities and/or attention deficit disorders
- **Writing Center:** for students who need help with writing
- **OSD:** for students with physical disabilities
- **Dean of Students:** accommodations with health or family emergencies

Scientific Inquiry domain

Courses in the Scientific Inquiry domain are designed to provide students with an opportunity to learn the methods of modern science and its impact on the world around us. Courses are designed to help students develop a more complete perspective about science and the scientific process, including: an understanding of the major principles guiding modern scientific thought; a comprehension of the varying approaches and aspects of science; an appreciation of the connection among the sciences; the fundamental role of mathematics in practicing science; an awareness of the roles and limitations of theories and models in interpreting, understanding, and predicting natural phenomena; and a realization of how these theories and models change or are supplanted as our knowledge increases.

Goals and Learning Outcomes

Below are listed the learning goals and outcomes for the Science Inquiry Domain. Each goal is listed followed by learning outcomes associated with the goal. Most of this document conforms to the National Science Education Standards.

1. Students will understand the major principles guiding modern scientific thought. Students will demonstrate a mastery of the science content knowledge of their SID courses.
2. Students will know that science, technology, and math serve as mechanisms for inquiry into the nature of the universe.
3. Students will understand and appreciate the interrelationships among science, technology and math.
4. Students will understand and appreciate the role of science in society and in their lives.
5. Students will understand the nature of science, technology, and mathematics.

Upon completion of this class, you will be able to (class-specific learning outcomes):

- Explain what environmental science is.
- Describe science as a process and the methods of modern science.
- Describe the interdisciplinary nature of environmental science and its major concepts and theories.
- Using a systems approach:
 - Describe the four major components of the earth's realms and their interrelationships.
 - Describe the fluxes of energy and matter between these cycles.
- In the laboratory, apply methods of modern science to real environmental issues.
- Be able to describe the scientific basis of the major environmental issues facing society today.
- Describe the impacts of contemporary human activities on the earth's processes.

Syllabus

Week—Dates	Topic	Reading (due Tue)	Footprint exercise (due Thu)	Notes
1—Sep 10–12	Introduction	Chapter 1	None	No quiz
2—Sep 15–19	Policy, Economics & Human Population	Chapter 2 & 6	Chapter 6 (140)	
3—Sep 22–26	Science fundamentals	Chapter 3	Chapter 3 (74)	
4—Sep 29–Oct 3	Atmospheric science	Chapter 12 (270–287)	Chapter 12 (299)	
5—Oct 6–10	Atmospheric science cont'd	Chapter 12 (288–299)	Chapter 13 (327)	Additional reading on Blackboard
6—Oct 13–17	Nonrenewable energy sources	Chapter 13	None	Midterm exam (Oct 16)
7—Oct 20–24	Renewable energy sources	Chapter 14	Chapter 14 (352)	
8—Oct 27–31	Land use	Chapter 9	Chapter 9 (216)	
9—Nov 3–7	Ecology	Chapter 4	Chapter 4 (95)	
10—Nov 10–14	Biodiversity	Chapter 8	Footprint project	
11—Nov 17–18	Conclusion			No quiz

The above schedule is a framework, and changes will be communicated in class and via the Blackboard site.

Class times: Tuesday & Thursday 10:10–11:40 am

Class location: Levan Center Room 100

Lab times: Tuesday or Thursday 1:00–4:00 pm

Lab location: McGowan Hall Room 101

Final exam: Wednesday, Nov. 19 11:45 am–2:00 pm