

# Concepts of Environmental Science – ES 160

## Westminster College

### Pertinent Information

Instructor: Douglas Armstead

Office: 124 Hoyt (724) 946-7201

Email: armstedn@westminster.edu

Course website: [www.westminster.edu/staff/armstedn/S12/ES160.html](http://www.westminster.edu/staff/armstedn/S12/ES160.html)

Class meets: TR 7:40-9:20 in Hoyt 116.

Lab meets: T 2-5 in Hoyt 206

Office Hours: MWF 10-11am

Texts:

*Principles of Environmental Science, Inquiry & Application* by Cunningham and Cunningham published by McGraw-Hill.

Prerequisites: None.

### The Point of this Class <sup>1</sup>

This course is “An investigation of the effects of humans on the Earth’s environment and on the other species that inhabit our planet. The course will look at the impact that an increasing human population has on the resource utilization, pollution production, habitat degradation, and extinction of species. It will include a brief look at the policies and laws that specifically relate to environmental problems.”

This is, of course, a herculean task that will require us to draw on math, physics, chemistry, biology, psychology, sociology, economics, and political science. To help us sort our way through this we will do well to have an organizing principle, and I have structured the course around the idea of a flow (e.g., flows of energy, flows of matter, flows of money). These questions then boil down to two basic questions:

1. How do humans affect these flows? and
2. How are humans effected by these flows?

---

<sup>1</sup>If you are looking for the outcomes of this course, they are here. This course’s effectiveness will be assessed by monitoring the quality of the student’s work on the graded elements of this course. See Graded Elements section for their descriptions.

## Objectives

By the end of this course I will expect you to be able to:

- Express what the current issues are in environmental science.
- Relate the relevant science to these problems.
- Use the scientific method to approach environmental investigations.
- Critically analyze strong views about environmental issues.
- Apply the methods of environmental science to new problems as they arise.

## Expectations

What you should expect from me:

- Explanations of the relevant concepts that include concrete examples and, where reasonable, demonstrations.
- Careful and respectful consideration of your questions.
- An open door policy—if my office door is open you should feel free to come in and talk about physics. This is in addition to my regularly scheduled office hours listed above.

What I expect of you:

- Your presence in class, both physical and mental, for the entire class period.
- To prepare for class. This includes doing the reading at a level that you arrive with questions in hand about the material.
- Participate in discussions and when you have a question, ask it. Your fellow classmates will thank you—if you are unclear on something, chances are the person next to you is, too.
- Submit work for grading that is your own. If you copy from another student or source and submit it for a grade, then you risk receiving an F in the course.

## Grades

You start this class out with an A. Over the course of this semester your grade will be adjusted based on the degree of mastery of the material you show through your assignments, inclass activities, labs, midterm exams, reports on articles/co-curricular activities, group project, and your class participation. The final score for the class has the following weighting: **Important: you must complete the lab portion of this course to pass this course**

---

15%	Assignments and activities
15%	Labs
30%	Exams (2)
15%	Reports on articles (2) and co-curriculars (2)
20%	Group Project
5%	Participation

---

## Graded Elements

Make-up exams will only be administered for “Excused Absences” (see pages 70-71 of your Undergraduate Catalog for details). Supporting documentation to excuse your absence will be required.

**Assignments/Activities:** In addition to regular textbook reading assignments, students may be required to complete additional assignments and/or in class activities. The focus will be either on deepening the student’s understanding of course material, or applying it to current topics, case studies, or controversial issues.

**Labs:** Lab work will be done both in the laboratory and in the field. Safety goggles, long pants/skirts, and closed-toed shoes may be required when working in the lab. Weather-appropriate attire and shoes should be worn for outdoor activities. Several of the labs will be in the form of field trips requiring travel off-campus. Some of these trips require time above and beyond the regularly scheduled lab time. It is your responsibility to make other arrangements with potential conflicts. Talk to me if you have questions.

**Reports:** You will be required to prepare **two** article reports and **two** co-curricular reports. Each will be two pages (double spaced), page one is a summary of the article/event, page two relates the article/event to this course.

You might consider the following sources for articles: *New York Times Tuesday science column, NPR’s Science Friday program, Nature magazine, local newspapers, etc..*

You might consider the following sources for Co-curricular activities on and off campus: lectures, public meetings of environmental groups, trips to environmental parks/areas/facilities, governmental meetings.

I **strongly** encourage you to do one each month.

**Group Research Project:** In groups you will formulate a research question based on your interests that relates to Environmental Science. While your question will relate to the broad topics discussed in this course (air, water, soil, food, greenspace, energy) and some part of humanities impact on/from these resources your question must be specific enough to be answerable via application of the scientific method. While some class and lab time will be dedicated to working on the project, additional time will be necessary to complete the project. Your group will present your results publicly (oral or poster presentation) and each student individually in the form of a written paper (5-7 page, double-spaced). The public presentation may be done in class or at URAC on Wednesday April 24 (application due in March). Your paper will present your research information and include a brief reflection on how this research intersects with other disciplines/areas of

life. It should include an annotated bibliography of cited sources. The project will be evaluated based on its scientific merit and critical reasoning.

The raw score above is turned into a grade as below:

Final %	Grade
90-91,92-100	A- to A
80-81,82-86,87-89	B- to B+
70-71,72-76,77-79	C- to C+ etc.

Improvement may be used to raise a border line grade.

### **Academic Integrity**

You are expected to observe the College's statements and procedures on Academic Integrity in your Undergraduate Catalog, near pages 72-76. Ask me if you have any uncertainty about what is proper collaboration and what is not.