

ENV 100/101: Introduction to Environmental Science

Fall 2009

Boehm 261 (Lecture) and Boehm 234 (Lab)

Lecture: T/H 10:00 to 10:50; Lab: W 2-5 PM

PROFESSORS

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REQUIRED TEXT

Brennan, S, and Withgott, W. *Essential Environment: the science behind the stories*, Pearson Benjamin Cummings Publishing (you can use either the second or the third edition)

COURSE OBJECTIVES: The student will 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 ecosystem in environmental science.
4. Apply the fundamentals of population biology to population analysis and to 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.

ATTENDANCE: Attendance is expected for all lectures and lab activities.

NOTE: If you have a disability that requires accommodation, please contact the instructors privately so that we can assist you. The Office of Human Diversity (215 Stratton Adm. Bldg) should be contacted to coordinate reasonable accommodations for students with documented disabilities.

GRADING: Each section of the course is worth 150 pts, for a possible maximum of 450 points. Grades are based on percentage out of 450 points (90-100% = A; 80-89% = B; 70-79% = C; etc.)

Biology Exam	100 pts
Biology Lab Work	50 pts
Geology Exam	100 pts
Geology Lab Work	50 pts
Chemistry Exam	100 pts
Chemistry Lab Work	50 pts
TOTAL	450 pts

TENTATIVE LECTURE SCHEDULE

PART ONE: BIOLOGY

Date	Topic	Readings in Brennan & Withgott	
Sep		(2nd ed.)	(3rd ed.)
1	Intro to Env. Sci.	Chap. 1	Chap. 1
3	Environmental Systems	Chap. 3	Chap. 3
8	FOLLOW MONDAY SCHEDULE		
10	Environmental Systems (cont)	Chap. 3	Chap. 3
15	Ecology & Evolution	Chap. 4	Chap. 4
17	Ecology & Evolution (cont)	Chap. 5	Chap. 5
22	Human Population Growth	Chap. 6	Chap. 6
24	Human Population Growth (cont)	Chap. 6	Chap. 6
29	Biodiversity & Conservation Biology	Chap. 8	Chap. 8
Oct			
1	BIOLOGY EXAM (100 pts)		

PART TWO: GEOLOGY

Oct		(2nd ed.)	(3rd ed.)
6	Water Resources	Chap. 11	Chap. 12
8	Land Use and Land Cover Change	Chap. 9	Chap. 9
13	Mineral Resources	Handout	
15	Fossil Fuels	Chap. 13	Chap. 15
20	Renewable/Sustainable Energy	Chap. 14	Chap. 16
22	Waste Disposal	Chap. 15	Chap. 17
27	Soils and Agriculture	Chap. 7 & Handout (Chap. 7)	
29	Climate Change: Factors and History	Chap. 12 & Handout (Chap. 14)	
Nov			
3	Climate Change: Current and Future	Chap. 12 & Handout (Chap. 14)	
5	GEOLOGY EXAM (100 pts)		

PART THREE: CHEMISTRY

Nov		(2nd ed.)	(3rd ed.)
10	Chemistry & the Environment	Chap. 3	Chap. 3
12	Atmospheric Science & Air Pollution	Chap. 12	Chap. 13
17	Climate Change: Ozone & Acid Rain	Chap. 12 & Handout (Chap. 14)	
19	Climate Change: Global Warming	Chap. 12 & Handout (Chap. 14)	
24	Water Pollution	Chap. 11	Chap. 12
26	THANKSGIVING RECESS		
Dec			
1	Soil, Agriculture, Pesticides	Chap. 7 & Handout (Chap. 7)	
3	Solid & Hazardous Wastes	Chap. 15	Chap. 17
8	Environmental Health & Toxicology	Chap. 10	Chap. 10
10	Nuclear Energy	Chap. 13	Chap. 15
15	CHEMISTRY EXAM (100 pts)		9:00-9:50 AM

TENTATIVE LAB SCHEDULE

PART ONE: BIOLOGY

Sep	2	Discussion: Group Project Assignment
	9	Ecoplot Stream: Sampling and Data Analysis (10 points)
	16	Ecoplot Forests: Sampling and Data Analysis (10 points)
	23	Ecoplot Soils: Sampling and Data Analysis (10 points)
	30	Group Project Presentations (20 points)

PART TWO: GEOLOGY

Oct	7	Blue Marsh Lake Field Trip (10 pts)
	14	Pioneer Tunnel Coal Mine Field Trip (10 pts)
	21	Western Berks Land Fill Field Trip (10 pts)
	28	Rodale Institute Field Trip (10 pts)
Nov	4	Climate Change Crisis (or not) Debate (10 points)

PART THREE: CHEMISTRY

Nov	11	KU Air Monitoring Station Tour (10 pts)
	18	Determination of the pH and Alkalinity of Natural Water (15 pts)
	25	THANKSGIVING RECESS
Dec	2	Determination of Iron in Soil Leachate (15 pts)
	9	Solids in Cigarette Smoke (10 pts)