

SYLLABUS

ENSP 101 and 101U Environmental Science (3 credits)

Fall, 2009

MWF from 12-12:50 in 0220 Jimenez Hall

Instructor: Dr. Bruce R. James, Professor of Soil Chemistry (Dept. of Environmental Science and Technology)
Director of Environmental Science and Policy
Director of Environmental Studies, College Park Scholars

Address and Contact Numbers:

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Office Hours:

By appointment; arranged by calling Ms. Brown at 5-8571; or spur-of-the-moment
Often available mornings in 0220 Symons

Graduate Teaching Assistants:

Discussion section numbers:

Craig Giesecke	giesecke@umd.edu	103, 105
Janine Harris	jharris4@umd.edu	104, 106
Ryan Richards	ryanri@umd.edu	101, 102
Bruce James	brjames@umd.edu	107

Undergraduate Teaching Assistant:

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Web site for course:

<http://www.ensp.umd.edu/> Then, under "About," go to "Courses" and ENSP 101

Course Philosophy, Background, and Expectations

Scientific study of the complex and diverse natural environmental systems of the earth is a relatively young human endeavor that has rapidly gained stature as an academic field in the last 30 years, and it is now a high priority worldwide. Quantifying the spatial and temporal dimensions of the atmosphere, the lithosphere, and the hydrosphere is essential to a refined understanding of how these "great earth systems" influence and interact with ecosystems and the biosphere. New knowledge about these systems and their interactions has come from the "parent" basic sciences of environmental science (e.g., chemistry, physics, geology, and biology) and from whole system studies that focus on element cycles, energy flows, and interfaces between diverse components of ecosystems. In addition, increasing concern about the environmental quality of water, air, soil, and living organisms has become a key concern that has led to direct connections between science and environmental public policy worldwide.

The following goals of this introductory course in environmental science will be achieved by engaging you in lectures, small group discussions, readings, and case studies. The key words in bold font identify themes and topics in the course that will recur across the various units during the semester.

- (1) develop your knowledge and understanding of the **systems, cycles, flows, and interfaces** that characterize

- and govern the structure, function, and interactions of the atmosphere, lithosphere, hydrosphere, and biosphere.
- (2) quantify the natural and anthropogenic processes that influence environmental systems from local to global **scales** (temporal and spatial)
 - (3) refine your skills in the areas of analysis, synthesis, and evaluation with respect to complex systems and the scientific methods and processes by which knowledge is obtained and advanced in environmental science (**scientific epistemology** or ways of knowing).
 - (4) understand the nature of **scientific knowledge, uncertainty and methods of quantification** for environmental processes and systems
 - (5) identify and evaluate **human influences on natural processes** of earth systems, and assess the extent of environmental problems and creative ways to address them in the future.
 - (6) provide a sound scientific base for the study of **environmental policy and analysis of environmental news** at the introductory level (i.e., ENSP 102 Environmental Policy).

ENSP 101 is the required gateway course and introduction to the science component of the Environmental Science and Policy major, and it satisfies the CORE Physical Science (non-lab) requirement (category PS). This course also is an “Environment” course for the College Park Scholars, Environmental Studies curriculum. As a CORE course, ENSP 101 engages you in learning approaches and methods of inquiry that complement any major, whether in the natural sciences, social sciences, or humanities. You will learn critical thinking skills in the sciences, but also ones related to interdisciplinary ways of knowing. You will refine your problem-solving skills using some mathematical approaches and individual creative writing.

The Concept of Sustainability for Human Societies, Economies, and Their Supporting Natural Resources: Links to Your Education at the University of Maryland

In this course, you will engage in learning about natural living ecosystems, abiotic resources, and humans as members of natural eco-regions. Through a balance of conservation and preservation, humans forge modern complex societies while using ecosystem services and natural resources. In so doing, they affect the potential for future human cultures to meet their basic needs and for ecological systems to maintain their characteristic material cycles and energy flows. The concept of *sustainability* embodies these ideas and has become a central tenet of environmental science and policy in recent years.

In 1987, the World Commission on Environment and Development published *Our Common Future* (Oxford University Press), also known as the Brundtland Report (after its chair, Gro Harlem Brundtland, former Prime Minister of Norway). Sustainable development is defined in this seminal report in this way:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Questions and concerns about sustainability and future generations have been linked to many human activities in the biosphere, e.g., agriculture, forestry, urban development, energy use, and water management. In this course, you will have the opportunity to incorporate new thinking and learning related to sustainability into your intellectual experience and growth.

The Office of Sustainability at the University of Maryland has initiated the Chesapeake Project to infuse the undergraduate experience with learning and thinking surrounding sustainability at many levels, from individual courses to program curricula, campus life, regional issues, and global concerns. Their website is

<http://www.sustainability.umd.edu/>. The International Institute for Sustainable Development is an excellent site for general information on sustainability at <http://www.iisd.org/sd/>. You are encouraged to consult these and other resources during the semester and after completion of this course.

Required Texts for the Course

Cunningham & Cunningham (C&S), 10th edn. 2008. Environmental Science, McGraw-Hill, Boston. ISBN 978-0-07-305138-3

Grading and Evaluation of Student Learning

There will be two, required hour tests (not comprehensive) and a final examination (comprehensive). In addition, three review problem sets and two short papers will provide other means to assess your learning outside of class. You will have the opportunity to earn up to 1000 points in the course, and you can calculate your numerical average at any time during the semester. Individual letter grades for the course will be assigned on a curve if the class average is < 75%, and on the standard basis if the class average is > 75%: 100-98% = A+, 97-92 = A, 91-90 = A-; 89-88 = B+, 87-82 = B, 81-80 = B-; 79-78 = C+, 77-72 = C, 71-70 = C-; 69-68 = D+, 67-62 = D, 61-60 = D-; ≤ 59 = F. You are advised to keep all graded work throughout the semester in case you have a question about your final course grade. Also, keep a personal record of your accumulated points as the semester progresses.

<u>Requirement</u>	<u>No.</u>	<u>Points/unit</u>	<u>Total Points</u>
Hour exams	2	150	300
Final exam	1	300	300
Problem Sets	3	25/25/50	100
Papers	2	125	250
Participation/engagement	1	50	<u>50</u>
TOTAL			1000

The examinations will comprise problem-oriented essays and short answer questions (not multiple choice) and will be based on material covered in lecture and supported by assigned readings in C&C. The lectures will follow the textbook format and topics, but much will be added that is not covered in the text. **Success in this course begins by attending lectures and discussion classes, taking good notes, and questioning what you hear in lecture and read in the book.**

The problem sets and papers will account for 30% of your grade. These will be coordinated with the lecture material as much as possible, and they will provide some mathematical and social science perspectives on the science covered in the lectures. Your participation grade for the discussion classes (out of 100 points for the semester) will be based on the quality and frequency of your contributions to the lectures and discussion exercises each week, including work on case studies in small groups, role playing, email communications, extra initiatives taken outside of class, and communication with the TA's and instructor.

Computer skills needed for this course:

Wordprocessing

Access to and use of the Web and email

Cautionary note: do your written work on only one computer, if possible. Print from that computer; back up your work on a CD or flash drive each day; and save it for the whole semester in electronic format.

Policy on late work, attendance, grade appeals, and make-up exams:

Problem sets and papers will lose 5% of the assigned points for each day that the work is handed in late,

unless a valid excuse is approved by the TA or instructor before the due date. **Papers and problem sets are due on specified dates by 5 pm in Rm. 0220 Symons or by delivery to your TA (see schedule below).** Electronic submissions will not be accepted.

Make-up exams will be given only if a valid excuse for missing the originally-scheduled exam is approved by the instructor prior to the exam time.

Attendance will not be taken at lecture, but will be taken in discussion. Since the course content and thinking skills will be developed in the lectures and refined through your participation in the discussions, you are strongly encouraged to attend all lectures and the weekly discussions. Each week, your TA will note the quality of your participation, and points, out of 100, will be assigned at the end of the semester, based on a discussion between the instructor and the TA.

If you believe that any grade you have received in this course is not correct or fair, you are entitled to file an appeal within one week of when the graded work is returned to you. To do this, submit the entire exam, paper, or problem set with an attached explanation for why you think you deserve more points. I will handle exam grade appeals, and your TA will evaluate those for the papers and problem sets.

Tips for Success in ENSP 101:

- (1) Attend all classes throughout the semester and arrive on time. I will start lecturing at 11:00 and will end at 11:50, and your TA's will be punctual and efficient in the use of their class time. Plan to devote 6-9 hours each week outside of class to this course.
- (2) Ask questions of the instructor and teaching assistants; don't be shy about this.
- (3) Take careful notes in lecture and discussion, and review them soon after class. Keep handouts in a three-ring or other notebook; there will be lots of them throughout the semester.
- (4) Ensure that you know why you missed all points on exams and assigned work; if you do not, consult with the instructor or TA.
- (5) Communicate and study with fellow students, but always produce your own work. Do not plagiarize, and cite all your sources in the text of the papers and in a Works Cited section. Be especially assiduous about using information from the Web—cite the source, and do not cut and paste text without attribution and quotation marks. **Please see this Web site for information on plagiarism and citing references:**

http://www.lib.umd.edu/UES/plag_stud_what.html

- (6) Use all resources available to you in this course and at UMCP. Meet with and send email questions to the instructor and TA's; use the libraries on- and off-campus; access the Web; and follow the latest environmental news.
- (7) Be looking for linkages between this course and your major and personal interests.
- (8) Write in clear, grammatically-correct English. Hand in papers and problem sets that are neat and free of spelling errors, and that demonstrate attention to detail. Produce polished, professional work.
- (9) Buy and use a stapler, please!

Discussion Section Information

Section #	Meeting Time	Meeting Place	TA Name
0101	2 pm Th	0110 Martin (EGR)	Ryan
0102	10 am F	3102 Martin (EGR)	Ryan
0103	1 pm F	1204 Eng. Lab. Bldg. (EGL)	Craig
0104	1 pm F	1202 Eng. Lab. Bldg. (EGL)	Janine
0105	2 pm Th	3102 Martin (EGR)	Craig
0106	10 am F	1102 Martin (EGR)	Janine
0107	2 pm Th	0209 Symons (SYM)	Dr. James

University of Maryland Policies for All Courses:

- **Academic Accommodations:** If you have a documented disability, you should contact Disability Support Services 0126 Shoemaker Hall. Each semester students with documented disabilities should apply to DSS for accommodation request forms which you can provide to your professors as proof of your eligibility for accommodations. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS web site at http://www.counseling.umd.edu/DSS/receiving_serv.html.
- **Religious Observances:** The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs. They shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. The student should inform the instructor in advance of any intended absences for religious observances. Notice should be provided as soon as possible, but no later than the end of the schedule adjustment period. Prior notification is especially important in connection with final exams, since failure to reschedule a final exam before the conclusion of the final examination period may result in loss of credits during the semester. The problem is especially likely to arise when final exams are scheduled on Saturdays.
- **Academic Integrity:** The University of Maryland has a nationally recognized code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html>. The University of Maryland is one of a small number of universities with a student-administered Honors Code and an Honors Pledge, available on the web at <http://www.jpo.umd.edu/aca/honorpledge.html>. The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures.

I encourage, but do not require, you to write the following signed statement on each examination or assignment: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)."

Class Schedule [Reading assignments related to the lectures will be given at beginning of each unit]

Lecture #	Date	Lecture Note	Discussion this week (Th or F)
1	Wed., Sept. 3	Nature of environmental science	
2	Fri., Sept. 5	Nature of env. science cont.; hand out paper #1 assignment	No discussion this week
3	Mon., Sept. 8	Nature of env. science end	

4	Wed., Sept. 10	Cycles & systems start	
5	Fri., Sept. 12	Cycles & systems cont.	#1 Discussion of “Earth on Edge” video
6	Mon., Sept. 15	Cycles & systems end	
7	Wed., Sept. 17	Communities & Biomes start; hand out prob. set #1	
8	Fri., Sept. 19	Communities & Biomes cont.	#2 Discussion of drafts of papers
9	Mon., Sept. 22	Communities & Biomes cont.; paper #1 due	
10	Wed., Sept. 24	Communities & Biomes; prob. set #1 due	
11	Fri., Sept. 26	Communities & Biomes end	#3 Plan B: chap. 1, 6
12	Mon., Sept. 29	Energy start; return prob. set #1	
13	Wed., Oct. 1	Exam #1 through biomes unit	
14	Fri., Oct. 3	Energy cont.	#4 Plan B: chap. 2, 11, 12
15	Mon., Oct. 6	Energy end;	
16	Wed., Oct. 8	Atmosphere start	
17	Fri., Oct. 10	Atmosphere cont.	#5 Plan B: chap. 3; return paper #1
18	Mon., Oct. 13	Atmosphere cont.; hand out prob. set #2	
19	Wed., Oct. 15	Atmosphere cont.	
20	Fri., Oct. 17	Atmosphere cont.	#6 Atmosphere TBA; Return exam #1
21	Mon., Oct. 20	Atmosphere cont.; prob. set #2 due	
22	Wed., Oct. 22	Atmosphere end	
23	Fri., Oct. 24	Hydrosphere start; hand out paper #2 & extra credit paper assignments	#7 Plan B: chap. 4 Return prob. set #2
24	Mon., Oct. 27	Exam #2 on energy and atmosphere units	
25	Wed., Oct. 29	Hydrosphere cont.	
26	Fri., Oct. 31	Hydrosphere cont.	#8 Hydrosphere TBA
27	Mon., Nov. 3	Hydrosphere cont.	

28	Wed., Nov. 5	Hydrosphere end	
29	Fri., Nov. 7	Oceans begin	#9 Oceans TBA
30	Mon., Nov. 10	Oceans cont.; Deadline for selection of articles for paper #2 and extra credit paper	
31	Wed., Nov. 12	Oceans end	
32	Fri., Nov. 14	Biodiversity begin	#10 Plan B: chap. 5
33	Mon., Nov. 17	Biodiversity cont.	
34	Wed., Nov. 19	Biodiversity end	
35	Fri., Nov. 21	Population begin	#11 Plan B: chap. 7, 10
36	Mon., Nov. 24	Population cont.	
37	Wed., Nov. 26	No lecture today	No discussion this week: Thanksgiving Break
38	Mon., Dec. 1	Population end; paper #2 due	
39	Wed., Dec. 3	Lithosphere start; hand out prob. set #3	
40	Fri., Dec. 5	Lithosphere cont.; extra credit paper due	#12 Plan B: chap. 5, 8, 9
41	Mon., Dec. 8	Lithosphere cont.;	
42	Wed., Dec. 10	Lithosphere cont.; prob. set #3 due	
43	Fri., Dec. 12	Last class; wrap-up	#13 Plan B: chap. 13
	Sat., Dec. 13	Optional review session for final exam; return extra credit papers, paper #2, and prob. set #3	
	Wed., Dec. 17	Final exam, 8-10 am; 1202 EGR All lecture units of course covered; not including material from discussion classes	
	Sat., Dec. 20	Course grades available on Testudo in afternoon	