

ENVIRONMENTAL SCIENCE*Version 4, Updated 2011-10-03***Contact Information:**

Name: Dr. Brian M. Napoletano
Office: Ford Life Sciences, 212
Office Hours: MWF, 1:00 – 4:00 PM
Email: napolebm@udmercy.edu

Class Information:

Lecture: MW 11:00-11:50 AM, Commerce & Finance, 139
Discussion: F 11:00-11:50 AM, Commerce & Finance, 139
Course Web Site: <http://napoletano.net/envsci/index.html>

Required Texts: Raven, P. H., L. R. Berg, and D. M. Hassenzahl (2010). *Environment*. (Seventh ed.) Hoboken, New Jersey, United States: John Wiley & Sons. 978-0-470-11857-3
Online material: <http://www.wiley.com/college/raven>
Ellsworth, B. and J. A. Higgins (2010). *English Simplified*. (Twelfth ed.) New York, New York, United States: Pearson Education, Inc. 978-0-205-63329-6
Previous editions of both texts are acceptable.

Description

The course reviews general features of the biosphere (the physical domain of life on the planet Earth) and how they are responding to the expanding human enterprise. Course topics include the role of science in society, biogeochemical cycles in the atmosphere, hydrosphere, and lithosphere, the ecosystem concept and the major types of ecosystems, and the general dimensions of global change, such as climate change, nutrient loading, and biodiversity loss. Students will be introduced to a wide variety of perspectives on the underlying causes of global change and changes needed to facilitate a sustainable society.

Objectives

The objectives of this course are to:

1. Help students understand the science of global environmental change
2. Help students develop an informed perspective on environmental change and its technological, cultural, social, political, and economic dimensions
3. Describe how dimensions of environmental change relate to one-another and to society
4. Equip and empower students with the knowledge and skills necessary to address the environmental and social challenges they will face

Structure

Monday and Wednesday classes, as well as the first Friday class (9 September), will consist primarily of lectures, while subsequent Friday classes will be devoted to discussions (and two exams). Discussion topics will be selected from the topics of interest you selected in the surveys distributed on the first day of class. The discussions will be based on reading assignments that will be provided prior to each discussion. Students are *required* to attend at least three discussion sessions, and *encouraged* to attend as many as they are interested in.

Extra points will be granted to students who participate in a fourth lecture. If you decide that you would like to attend a discussion other than one that you indicated on your survey, you are welcome to do so, but you should notify the instructor so that he can plan accordingly.

Tentative Schedule

Week	Date	Topic	Reading
1	7 Sep 9 Sep	Introduction to Environmental Science Science, Society, and the Biosphere	Raven et al. (2010) Ch. 1
2	12 Sep 14 Sep 16 Sep	Ecosystems, Biomes, and Energy Flows Community Ecology <i>Discussion: Pricing Ecosystem Services</i>	Raven et al. (2010) Ch. 3 Raven et al. (2010) Ch. 4 TBA
3	19 Sep 21 Sep 23 Sep	Biogeography I Biogeography II <i>Discussion: Freshwater Supplies and Quality</i>	Raven et al. (2010) Ch. 6 TBA
4	26 Sep 28 Sep 30 Sep	Population Ecology Review for Exam I Exam I	Raven et al. (2010) Ch. 8
5	3 Oct 5 Oct 7 Oct	Class Cancellation Biogeochemical Cycles and the Major “Spheres” <i>Discussion: Overpopulation & Overconsumption</i>	Raven et al. (2010) Ch. 5 TBA
6	10 Oct 12 Oct 14 Oct	Mineral Resources Essay 1 Assigned Food, Agriculture, and Soil Conservation <i>Discussion: Food & World Hunger</i>	Raven et al. (2010) Ch. 16 Cunningham & Cunningham (2008) Ch. 7 TBA
7	17 Oct 19 Oct 21 Oct	Urbanization & Ecological Economics Energy Production and Consumption <i>Discussion: Urban growth and sprawl</i>	Cunningham & Cunningham (2008) Ch. 14 Cunningham & Cunningham (2008) Ch. 12 TBA
8	24 Oct 26 Oct 28 Oct	Environmental Risk Review for Exam II Exam II	Raven et al. (2010) Ch. 7
9	31 Oct 2 Nov 4 Nov	Underlying Drivers: Population & Technology Underlying Drivers: Political Ecology <i>Discussion: Climate Change & Energy Use</i>	Raven et al. (2010) Ch. 9 Merchant (1992) Ch. 1 TBA
10	7 Nov 9 Nov 11 Nov	Water Resources & Pollution Essay 1 Due Climate Change and Air Pollution <i>Discussion: Air Quality & Pollution</i>	Cunningham & Cunningham (2008) Ch. 10 Cunningham & Cunningham (2008) Ch. 9 TBA
11	14 Nov 16 Nov 18 Nov	Solid and Toxic Waste Land-Use Change and Habitat Degradation Essay 2 Assigned <i>Discussion: Land Use & Tropical Deforestation</i>	Raven et al. (2010) Ch. 24 Raven et al. (2010) Ch. 18 & Foley et al. (2005) TBA

Week	Date	Topic	Reading
12	21 Nov	Biodiversity and Modern Extinction	Kump et al. (1999) Ch. 15
	23 Nov	The Environmental Movement(s)	Brulle & Jenkins (2008) & Brulle (2010)
	25 Nov	Thanksgiving Holiday	
13	28 Nov	Environmental Policy in the United States	Cunningham & Cunningham (2008) Ch. 15
	30 Nov	Global Environmental Governance	Speth (2004) Ch. 4 & 5
	2 Dec	<i>Discussion: Biodiversity Conservation in Public Parks</i>	TBA
14	5 Dec	Building a Sustainable Society Essay 2 Due	Raven et al. (2010) Ch. 25 & Foster 2009 Ch. 13
	7 Dec	Review for Final Exam	
	9 Dec	<i>Discussion: Environmental Governance in a Global Economy</i>	TBA
15	14 Dec	Final Examination	11:00 AM – 12:50 PM

Grading Policy

Your grade in this course will be based on three examinations (100 points each), two short essay assignments (50 points each), and in-class participation (i.e. in the discussions, 25 points each), for a total of 525 points. It has not typically been necessary to implement a grading curve, but the instructor may adjust grades upwards if it is deemed necessary.

Examinations (100 pts. each)

Exams will consist of a combination of multiple-choice, true/false, fill-in-the-blank, short-answer, and brief essay questions. One or two extra-credit questions will typically be offered at the end of each exam. Exams will be graded and returned to you. As no-one is infallible, you are welcome to approach the instructor during office hours or after class if you believe that you did not receive credit for a correct or partially correct answer. Please note, however, that the instructor reserves the right to adjust grades downwards as well as upwards in such cases (although this is rare, it is possible).

If you know you will be unable to attend class for one of the exams, please notify the instructor as soon as possible. If you miss an exam due to an unforeseen emergency, please contact the instructor as soon as possible (i.e. within 24-48 hours) and a make-up exam will be scheduled. Make-up exams will only be offered for genuine emergencies (e.g. sudden illness, death of a close friend or relative, severe injury).

Essays (50 pts. each)

Both essays will pertain to topics covered in class, and will ask you to present your perspective on an issue and to back it with evidence from different sources. You are welcome to work together to research and design your essays, but each student must write her/his own essay. Identical essays from two or more students will be considered instances of plagiarism, as will essays that quote extensively from other sources without proper attribution. Grammar, spelling, and punctuation will be marked but not graded in the first essay, but *will be graded* in the second.

Discussions (25 pts. each)

You receive ten points for attending each of your three required discussion sessions, while the remaining fifteen points depend on how much you participate in the discussion. If you remain silent the entire time or consistently interrupt your peers, you will receive no points; if you ask thoughtful questions or contribute thoughtful input, you will receive the full fifteen points.

Late Assignments

The essays are the only out-of-class assignments with clear deadlines. Printed copies of essays are to be delivered to the instructor's office no later than **5 PM** on the date that they are due. Late assignments will not be accepted in the absence of extreme extenuating circumstances.

Extra Credit

Additional essays and other unassigned work will not be accepted for extra credit in the absence of exceptional circumstances (e.g. a prolonged hospital visit or health complication). If you find that you are having trouble keeping up with class, understanding some of the material, or following the lectures and discussions, you are encouraged to visit the instructor during office hours.

Academic Integrity

You are expected to do your own work in this course and to adhere to the policies outlined in Appendix A of the *Student Handbook of Policies and Procedures*. You should read this appendix. Students caught engaging in premeditated cheating (plagiarizing, crib notes, inappropriate use of electronic devices, writing down questions, etc.) will immediately receive a failing grade in the course, and may be subjected to further disciplinary action by the University. Students caught engaging in opportunistic cheating (conversing during an exam, looking at someone else's exam, etc.) will receive a failing grade for that exam or assignment. If this occurs more than once, the student will receive a failing grade for the entire course.

Special Needs Accommodation

A disability or disorder should not prevent you from excelling in this course. If you need course accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please contact Emilie Gallegos, Director of University Academic Services/Disability Support Services at gallegem@udmercy.edu or (313) 578-0310 to schedule an appointment. University Academic Services is located on the 3rd Floor of the Library on the McNichols Campus. Students with special needs are urged to identify themselves to the faculty to discuss their concerns. However, faculty cannot provide disability accommodations without official notification from the Disability Support Services office.

Class Cancellation

Class will only be canceled if the President's office closes the university or the instructor has an emergency. If class is canceled on a day that an exam is scheduled, be prepared to take the exam during the next class period.

Attendance and Expectations

Beyond the three required discussions, your attendance at class lectures is not graded. Attendance is, however, strongly recommended, as exam questions will be taken from lectures as well as from the assigned readings. You are responsible for acquiring notes and other materials for classes you miss. During class, you are expected to be courteous and respectful to your peers, and to refrain from disrupting lectures or discussions. You are, however, encouraged to ask for clarification on points you find confusing. Please try to remember to switch mobile phones and pagers off or to "silent" during class.

Confidentiality

In keeping with the *Family Educational Rights and Privacy Act* (FERPA), no confidential information, including grades, will be sent to non-UDM email addresses.

Additional Sources

Some readings listed in the course schedule are from sources other than Raven et al. (2010). I will provide you with copies of these readings, the sources of which are listed below:

- Brulle, R. J. & J. C. Jenkins (2008). Fixing the bungled U.S. environmental movement. *Contexts* 7 (2): 14-18.
- Brulle, R. J. (2010). Politics and the Environment. In Leicht, K. T. & J. C. Jenkins (Ed.) *Handbook of Politics*. Handbooks of Sociology and Social Research. New York, New York, United States: Springer New York. pp. 385-406. 978-0-387-68930-2
- Cunningham, W. C. & Cunningham, M. A. (2008) *Principles of Environmental Science: Inquiry & Applications* (Fourth ed.). New York, New York, United States: McGraw-Hill. 978-0-07305-089-8
- Foley, J. A., R. DeFries, G. P. Asner, C. Barford, G. Bonan, S. R. Carpenter, F. S. Chapin, M. T. Coe, G. C. Daily, H. K. Gibbs, J. H. Helkowski, T. Holloway, E. A. Howard, C. J. Kucharik, C. Monfreda, J. A. Patz, I. C. Prentice, N. Ramankutty & P. K. Snyder (2005). Global consequences of land use. *Science* 309 (5734): 570-574.
- Foster, J. B. (2009). *The Ecological Revolution: Making Peace with the Planet*. New York, New York, United States: Monthly Review Press. 978-1-58367-179-5
- Kump, L. R., J. F. Kasting, & R. G. Crane (1999). *The Earth System*. Upper Saddle River, New Jersey, United States: Prentice Hall. 0-13-177387-9
- Merchant, C. (1992). *Radical Ecology: The Search for a Livable World*. Revolutionary Thought/Radical Movements. New York, New York, United States: Routledge. 0-415-90650-4
- Speth, J. G. (2004). *Red Sky at Morning: America and the Crisis of the Global Environment*. New Haven, Connecticut, United States: Yale University Press. 0-300-10232-1

Other Suggested Resources

If you are interested in learning more about some of the topics presented in this course, the following texts are suggested. A list of suggested readings will also be included at the end of each lecture. No test questions will be taken from these texts (unless a topic is specifically covered in a lecture), and they are merely provided for students who are interested in pursuing a topic further.

- Kump, L. R., J. F. Kasting, and R. G. Crane (1999). *The Earth System*. Upper Saddle River, New Jersey, United States : Prentice-Hall, Inc. 0-13-177387-9
- Mackenzie, F. T. (1998). *Our Changing Planet: An Introduction to Earth System Science and Global Environmental Change*. (Second ed.). Earth Science Series. Upper Saddle River, New Jersey, United States : Prentice-Hall, Inc. 0-13-271321-7
- Mol, A. P. J. and G. Spaargaren (2000). Ecological modernisation theory in debate: A review. *Environmental Politics* 9 (1): 17-49.
- Schlesinger, W. H. (1997). *Biogeochemistry: An Analysis of Global Change*. (Second ed.). San Diego, California, United States: Academic Press. 0-12-625155-X
- Smil, V. (2002). *The Earth's Biosphere: Evolution, Dynamics, and Change*. Cambridge, Massachusetts, United States: The MIT Press. 0-262-19472-4
- Vernadsky, V. I. (1998). McMenamin, M. A. S., Ed. *The Biosphere*. New York, New York, United States: Springer-Verlag New York, Inc. 0-387-98268-X
- WRI (2008) Ranganathan, J., K. Bennett, C. Raudsepp-Hearne, N. Lucas, F. Irwin, M. Zurek, N. Ash, P. West (Ed.) *Ecosystem Services: A Guide for Decision Makers*. Washington, DC, United States: World Resources Institute. 978-1-56973-669-2
Available online: <http://www.wri.org/publication/ecosystem-services-a-guide-for-decision-makers>