Welcome to Philosophy of Ecology **ENVS 410/510, BI 410/510**
MW 2:00 - 3:50, 301A Allen CRN: 36606, Spring 2010

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About the Philosophy of Ecology
Many of the greatest challenges facing society today involve our relationship to the natural world. How do we as individuals and a society respond to a changing environment? What can we do to manage our impact on the natural systems that sustain life? How can we continue to develop economically while ensuring that our children inherit a planet that is livable? The science of ecology is one of the fundamental sources of information regarding our relationship to the natural world. Our course will focus on how ecological knowledge is developed. How do we know what we know about nature?

Our course will also introduce students more generally to the philosophy of science. The science of ecology poses a number of very interesting and central questions in the philosophy of science. Ecology is a relatively new field of science, and has been called the most "intractable of the biological sciences." Ecologists struggle with the metaphysical character of the entities they study, with the use and misuse of metaphor and analogy, and with defining clear intellectual boundaries. Ecologists are also faced with the same fundamental issues that all scientists face, such as the how to balance rationalism and empiricism, the conflict between reductionism and holism, the nature of scientific "law", and the use and abuse of theory. All of these topics will be addressed in the proposed course, with the common theme of how these issues impact society's view of the relationship of humans to the natural world.

About the Instructors
Brendan Bohannan joined the University of Oregon faculty in September of 2006, after 8 years on the faculty at Stanford University. His research group studies the community ecology of microorganisms (viruses, bacteria, archaea, and microeukarya), using a combination of laboratory microcosm experiments and field studies using molecular techniques. He is particularly fascinated with the diversity of microbial life and much of his research is focused on the causes and consequences of microbial biodiversity.

Ted Toadvine joined the University of Oregon faculty in September of 2003, after 6 years of teaching at Kalamazoo College and Emporia State University. He researches the philosophy of nature, primarily using methods drawn from the philosophical schools of phenomenology and post-structuralism. Particular interests include environmental aesthetics, embodiment, animality, technology, ecological restoration, and the history of conceptions of the human-nature relation.

Web Site: Our web site is accessible via the UO Blackboard server. Login requires your UO Information Services (Computing Center) email address and the corresponding password.

How we will contact you: All of our communication to you outside of class will take place via email. Specifically, we will use the email registered to you by the University of Oregon. If you use another ISP for your email, make sure you arrange to have your UO email forwarded to it, or arrange to change your registered email address with UO.

Required readings and assignments: There isn't a required textbook for this course. We will be assigning reading from a variety of sources. By 12:00PM Friday, we will have posted the next week's readings and writing assignment on the class website. Most of the readings will be available for download as pdf files. To read these you will need Adobe Acrobat Reader, free software that is installed on UO computers and can be downloaded from the following website: http://get.adobe.com/reader/

Course Goals
We have two goals for this course:

- **Help you learn some of the central ideas in the philosophy of ecology**—This course is not a panoramic overview of the philosophy of ecology. In a 10 week course an overview could only be cursory. We feel strongly that as upper division and graduate students you will learn more if we take the time to explore in detail some of the major controversies and hot topics in the philosophy of ecology.
- **Help you continue your transition from student to *scholar*** —A scholar is someone who can think critically, argue logically, write clearly, and read effectively. Most importantly, a scholar understands how to organize and use knowledge, and takes responsibility for their own learning. Our goal is to provide you with opportunities to practice all of these skills.

Strategy for Achieving these Goals
By now, 95% of your education has likely been structured around lectures. Lectures are good tools for downloading information. They require a particular dynamic. This dynamic, bluntly stated, is "professor professes, student writes it down." Lectures, however, are pretty lousy ways to learn how to engage the literature and to learn how to read and think like a scholar. Instead, we will use the following tools to work on these skills:

- **Readings and the case method**—We will use the case method to dissect the readings. Through this analysis, we get to know the material by working with it, not by memorizing it. Thus for a typical class, you will be given a background reading, one or two readings from the literature (scientific or philosophical), plus some study questions. During the class period we will discuss the readings and the study questions. We may do in-class exercises that will help us explore the ideas in the readings. These exercises may take the form of debates, small group discussion of a particular question, a computer simulation or other exercise.
- **Essay Responses**—Every two weeks, you will be asked to write a short essay (around 3-5 pages) on a study question or questions key to understanding the current topic. You will exchange your essay with another member of the class, and each of you will provide written feedback on the other's work. You will then revise the essay, taking our class discussions and your classmate's comments into account. These essays are an opportunity to get some feedback on your writing and to engage with the material.
- **Case study —** You will have an opportunity to work with ideas from the philosophy of ecology by analyzing and presenting a detailed case study. We will give you a handout describing this assignment in more detail later. In brief, in small groups (3-4 students) you will choose an ecological study and analyze this study in the context of one of the philosophical topics we discuss in this course. Your group will present this case study to the class, and lead a class discussion of the topic.
- **Field Trip Report —** We will visit several ecological research studies. Each student will write a 2-3 page essay regarding each of these experiences, focusing on one of the philosophical topics we discuss in this course.
- **Final Paper —** Your final paper for the course will synthesize the themes we have studied throughout the term. For undergraduates these should be 8-10 pages, and will respond to essay prompts that we will post on Blackboard. Graduate students should select an independent topic for their final paper, around 12-14 pages, and discuss their topic with us by week 8.

What about grading? — Our approach to grading has been informed by a recent article (see http://www.aacu.org/liberaleducation /le-fa07/le_fa07_myview.cfm for the article). A week or two into the term, when you have a better sense of the course, we will discuss with you the best way to assign meaningful grades. We will collectively decide what goes into a thoughtful essay and what "good participation" means. As a class, we will create rubrics to assess performance. While we will ultimately make the judgments about performance, we will give you the opportunity to choose what we do and how we do it—within the broad constraint that the course has to have integrity and coherence and that the grades have to be good measures of student performance.

Grading us — Our approach to grading applies to our performance as well. Early in the term we will discuss with you the best way to evaluate our performance as a teachers. Collectively we will decide what constitutes effective teaching, and we will create rubrics to assess our performance. These rubrics will be used to assess teaching at mid- and end-quarter, and will augment the traditional end-quarter evaluations.

Tentative Course Schedule

Please note the tentative nature of this course outline, which we expect to change according to our progress and the topics of interest to the class.

WEEK 1: Monday, 3/29	**Introduction to Course** ▪ Overview ▪ Discussion of background assumptions
Wednesday, 3/30	▪ What is science? Popper, "Science: Conjectures and Refutations" Feyerabend, "How to Defend Society Against Science" Woodward & Goodstein, "Conduct, Misconduct, and the Structure of Science"
WEEK 2: Monday, 4/5 (draft response 1 due)	**What is Ecology?** ▪ popular conceptions vs. scientific ecology ▪ history of ecology and social/political context Worster, "Producers and Consumers" Kingsland, " Subversive Science?" Reiners & Lockwood, "Causes of Ecology's Conceptual Confusion"
Wednesday, 4/7	▪ fundamental concepts of ecology Klemow, "Basic Ecological Literacy" Pickett, Kolasa, & Jones, "Integration in Ecology"
WEEK 3: Monday, 4/12	▪ ecology and evolution Dawkins, selection from *The Blind Watchmaker* Gould and Lewontin, "The Spandrels of San Marco and the Panglossian Paradigm" Mayr, "How to Carry out the Adaptationist Paradigm?"
Wednesday, 4/14 (revised response 1 due)	**Field Trip 1**: Scott Bridgham and Bart Johnson's Global Change Field Site Global Change Feedbacks on Trace Gas Fluxes in Wetlands
WEEK 4: Monday, 4/19 (draft response 2 due)	**The Methods of Ecology** ▪ overview of methods in ecology ▪ experiments and observations **Guest Speaker**: Jay Odenbaugh, Associate Professor of Philosophy & Environmental Studies, Lewis and Clark College
Wednesday, 4/21	▪ hypothesis testing ▪ scientific laws Lawton, "Are There General Laws in Ecology?" Simberloff, "Community Ecology: Is It Time to Move On?" Cooper, "Theoretical Explanation and Fundamental Laws"

WEEK 5: Monday, 4/26	▪ the role of modeling Cooper, “Model Building: A Controversial Craft” Levins, “The Strategy of Model Building in Population Biology” Orzack & Sober, “A Critical Assesment of Levins” Levins, “A Response to Orzack and Sober”
Wednesday, 4/28 (revised response 2 due)	**Guest Speaker**: James O’Dwyer, postdoctoral fellow in theoretical ecology
WEEK 6: Monday, 5/3 (draft response 3 due)	**The Metaphysics of Ecology** ▪ Do communities exist? ▪ Do species exist? Clements, Preface to *Plant Succession* Gleason, “The Individualistic Concept of the Plant Association” Tansley, “The Use and Abuse of Vegetational Concepts and Terms” Dawkins, “The Salamander’s Tale” Jenson, “Cutting Nature at the Seams: Beyond Species Boundaries in a World of Diversity”
Wednesday, 5/5	▪ Reductionism and holism Odum, “The Emergence of Ecology as a New Integrative Discipline” Bergandi, “‘Reductionist Holism’” Levins and Lewontin, “Dialectics and Reductionism in Ecology: Allen and Starr, “Hierarchy: Perspectives for Ecological Complexity”
WEEK 7: Monday, 5/10	▪ Balance vs. chaos Worster, “The Ecology of Order and Chaos” Hettinger & Throop, “Refocusing Ecocentrism: De-Emphasizing Stability and Defending Wildness”
Wednesday, 5/12 (final response 3 due)	**Applications of Ecology** ▪ restoration and the place of humans in nature Elliot, “Faking Nature” Katz, “The Big Lie: The Human Restoration of Nature” Rolston, “Restoration”
WEEK 8: Monday, 5/17 (draft response 4 due)	**Guest Speaker:** Eric Higgs, Director of the School of Environmental Studies, University of Victoria
Wednesday, 5/19	▪ Conservation biology and biodiversity Soulé, “What is Conservation Biology?” Callicott, “On the Intrinsic Value of Nonhuman Species” Sarkar, “Defining ‘Biodiversity’: Assessing Biodiversity”
WEEK 9: Monday, 5/24	**Field Trip 2:** Restoration at the West Eugene Wetlands

Wednesday, 5/26 (final response 4 due)	▪ salmon recovery ▪ ecology and policy selection from Dewberry, *Saving Science* selection from Latour, *Politics of Nature*
WEEK 10: Monday, 5/31	**Ecological Epilogue** ▪ the future of ecology
Wednesday, 6/2	▪ final discussion
Friday, 6/4 - Sunday, 6/6	**Field Trip 3:** Mount Saint Helens
Tuesday, June 8th	Final papers due