

Syllabus

Instructor: Dr. Hank H. Stevens

Course No.: BOT 401/501

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About this Course

Before we describe details about this course, I want to describe in general terms what the course is about.

A Metaphor for the Course

The metaphor I like to use to describe a course of mine is that of a hiking trip, in which we trek through a large wilderness area. When I start, I know to a small degree what lies ahead and vaguely where I am headed. I never know, however, precisely what we will encounter, and nor can I anticipate the decisions that we will make. Neither you nor I have complete control over our path because we are each part of the group. The group may decide to take one route rather than another. The group may decide to take the easiest route across a particular mountain range, but probably not. More likely, we will challenge ourselves; it is simply in our nature to push ourselves to discover new things, and to see the world in a different way.

If you choose to come on this trip that is *Plant Ecology* (Botany 401), be prepared to work hard, to discover new things about the world around you, and perhaps to discover something about yourself. I hope that what you learn in this course, in a small way, changes who you are and how you see almost everything around you.

Course Content

Class meetings The class meets for only three 50 minute periods each week. In general, we will have two lecture periods (Monday, Wednesday) and one discussion period (Friday) each

week. We will use Fridays primarily for student-led discussions of the peer-reviewed literature. I will assign a paper to read each week that is relevant to that week's topics covered in the text (see schedule, below). The papers will be made available online, either through the library's resources or on Blackboard.

Readings My lectures will follow the text (Gurevitch *et al.* 2006. *The Ecology of Plants*, Sinauer Associates, Inc.). In addition to the text, we read papers from the peer-reviewed literature.

The *literature* is an essential part of your training. You must be able to read this literature to have access to the world of developing knowledge and ideas in any field. Relying on books means relying on old information. It is true that some very important information is old, and those who do not understand their history are destined to repeat it. Other information, however, is just becoming available, and you need to be able to seek it out and to understand it.

Perhaps the most important reason to read this literature is to learn to evaluate critically the generalizations, concepts, and knowledge we use to interpret the world around us and to predict the course of future events. Scientific knowledge is neither fixed nor immutable. Rather, some ideas have stronger support than other ideas, and you need to begin to critically evaluate that support.

Discussions We will discuss the assigned papers in a roundtable discussion on many Fridays. *You must participate in the discussions during class.* If you are shy, this will be more difficult; nonetheless, each of us must contribute to the discussion. Note that *asking questions about material that you did not understand is an important contribution* – if you did not understand something, chances are someone else didn't either. You will be evaluated on whether you participate. I am much more interested in your effort and frequency with which you raise questions or make comments than I am in the brilliance of your insights. Have no fear; speak up!

To help you prepare for the discussions, you should take notes that summarize important aspects of the paper. We will provide a list of questions that will guide your reading and note taking. Feel free to bring these notes to class with you.

Group assignment Students will team up, in pairs, to lead class discussions on papers that I have assigned for the entire class to read (see schedule below). Each group (i.e. a pair of students) are responsible for reading carefully additional re-

lated articles (at least three, preferably more). You must start preparing at least two weeks in advance, and consult with us about your preparation. During this time, you will write a short paper (see below) paper and prepare a short in-class presentation.

At the beginning of the discussion period, distribute a 1-page outline that summarizes the major points, provides additional citations, and lists 3–4 discussion questions. Begin the class with a brief presentation (~ 10–15 min). This presentation should provide a *conceptual background* for the paper and a very short summary of the paper (~ 10 min). Following this brief introduction, we break up into small groups, each of which will address different questions. Prior to the end of the class, we will come back together as a large group.

The 2 discussion leaders will turn in a brief (approx. 3–5 page, 1500–2000+ word) critical analysis of the paper. It is due at the beginning of the class period on the date of the discussion. This paper will address in depth the questions posed in my handout on *How To Read A Paper*.

In summary, as discussion leaders, you will work in pairs to lead a class discussion of one of the assigned readings. This will require that you,

- Read additional papers on the topic,
- Write a critical review of the paper,
- Give a 10 minute oral presentation (with presentation aids!).

Your grade on this assignment will be out of 45 pts. The (oral presentation and handout together will be worth 15 pts., and the paper will be worth 30 pts. The paper will be evaluated on the extent to which it appraises critically the key components of the paper, places the paper in a broader context, and the organization and clarity of the writing.

Homework Assignments We will have five small assignments that you do outside of class. These will be a combination of both written, critical thinking exercises, and quantitative problem sets that are glorified math word problems. These will help you to understand important concepts in class. These are each worth 10 pts.

Exams We will have four exams throughout the semester, including the final. The exams will include material covered in class, including lectures and discussions. The dates of the exams are listed in the schedule below. My current plan is that two of these will be taken in class, and two outside of class (see schedule below).

Additional Project for Graduate Students Enrolled in BOT 501 Graduate students enrolled in BOT 501 have additional work to do. This semester all of the graduate students will work as a team to complete a single project. The project will be a component of a landscape architecture design class run by Scott Johnston (School of Fine Arts). This class will be

helping to design an ultra-low impact high-tech industrial park that will be developed of of Rt. 73, east of Oxford.

The goal of your BOT 501 project is to design a demonstration of an ecological principle, namely that *communities of greater diversity tend to be more stable and have greater nutrient retention and productivity than communities of lower biodiversity*. Your first assignment will be to attend (excepting schedule conflicts) a meeting with Scott Johnston and the architecture class on **4 PM Wednesday 16 January**.

Grading System

The grading scale will be as follows: 90–100% A, 80–89% B, 70–79% C, 60–69% D, < 60% F. Grades with + or – will be assigned to percentages near the upper and lower extremes of each range.

Activity	Maximum Points
Group assignment	50 pts
Homework Assignments (5)	50 pts (10 pts. ea)
Exams (4)	200 pts (50 pts. each)
Total Points	300

Dropping and Withdrawal Policy

The withdrawal policy changed in Fall 2005. A link to the Student Handbook website is noted below and I have included the following points that may be of particular interest:

- If a student *drops* a full semester course by the third week deadline, the course will be removed from the record. (This is the same as before).
- If a student *withdraws* from a course, between the third week and ninth week of the term, a “W” will be recorded on her record, but this is not part of the calculated grade.
- A student cannot normally withdraw from a course after the ninth week of the term (she’s in it for the duration) and the only way to withdraw at this point is by petition.

Please see the following web site for more details: http://www.miami.muohio.edu/documents_and_policies/handbook/academic_regulations/acadregspii.cfm

Academic Misconduct

For the benefit of all, I will not tolerate lying, plagiarism, or other forms of misconduct. I will hold everyone accountable for the Academic Misconduct Policy at Miami University, as described in the Student Handbook (http://www.miami.muohio.edu/documents_and_policies/handbook/academic_regulations/acadregspv.cfm). Please read this material.

Schedule of Lecture and Discussion Topics, Readings, and Activities. All papers are available through the library, unless otherwise noted with "B."

Dates	Topics Readings and Activities
14 Jan.	Introduction; How to read a paper; Ch. 1 – Science of Plant Ecology
16 Jan.	Ch. 2 – Photosynthesis and Light Environment
16 Jan.	Grad students only – Miami Heritage Tech Park Project. Meeting at 4:00 pm, Alumni Hall, Energy Studio.
18 Jan.	Discussion paper (Rothstein & Zak, 2001).
21 Jan.	Martin Luther King Day
23 Jan.	Ch. 3 – Water Relations and Energy Balance;
25 Jan.	Discussion paper ^B (Bucci <i>et al.</i> , 2005)
28, 30 Jan. 1 Feb.	Ch. 4 – Soils, Mineral Nutrition, and Belowground Interactions Exam 1
4, 6 Feb. 8 Feb.	Ch. 5. – Population Structure, Growth and Decline Discussion paper (Kalisz, 1991)
11, 13 Feb. 15 Feb.	Ch. 6 – Evolution Discussion paper (Dudley & Schmitt, 1995)
18 Feb. 20, 22 Feb.	Presidents' Day Ch. 8 – Plant Life Histories
25, 27 Feb. 29 Feb. 29 Feb.	Ch. 7 Growth and Reproduction of Individuals Discussion paper (Ricketts, 2004) Take Home Exam Assigned <i>Due on Monday 3 March.</i>
3, 5 Mar. 7 Mar.	Ch. 10 – Competition and Other Interactions Among Plants Discussion paper ^B (Tilman & Wedin, 1991)
10, 12 Mar. 14 Mar.	Chap. ; Ch. 11 – Herbivory and Plant-Pathogen Interactions Discussion paper (Fine <i>et al.</i> , 2006)
17-21 Mar.	Spring Break
24, 26 Mar. 28 Mar.	Ch. 9 & 15 – Community Properties . . . in Landscapes . . . Discussion paper (Whittaker, 1965)
31 Mar., 2 Apr. 4 Apr.	Ch. 13 – Local Abundance, Diversity, and Rarity In class exam or discussion paper (Collins & Glenn, 1991)
7, 9 Apr. 11 Apr.	Ch. 17 – Climate and Physiognamy; Ch. 18 Biomes Discussion paper (Sperry <i>et al.</i> , 1994)
14, 16 Apr. 18 Apr.	Ch. 19 – Regional and Global Diversity Discussion paper ^B (Qian & Ricklefs, 2000)
21, 23 Apr. 25 Apr.	Chap. 14 – Ecosystem Processes Discussion paper (Vitousek <i>et al.</i> , 1987, or TBA)
28, 30 Apr. 2 May.	Ch. 21 – Global Change: Humans and Plants Discussion paper ^B (Chapin <i>et al.</i> , 2005, or TBA)
6 May	7:30–9:30 AM Tuesday Final Exam

References

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