

BIO 150: Introduction to Biological Inquiry- Prairie Restoration
Fall 2010

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Office hours:

Mondays	11-noon
Tuesday	2-3 PM
Wednesday	8-9 AM
Thursdays	10-11 AM
Friday	3-4 PM

I'll always be in my office at these times, and you needn't have an appointment to drop in. Please consult [my online calendar](#) and then contact me for appointments at other times. *I tend to read and reply to email at the beginning and the end of the day, so call or stop by my office if you need an immediate response to a question.*

Staff: Sue Kolbe, Biology Department Lab Technician, kolbe@grinnell.edu
Larissa Mottl, Conard Environmental Research Area Manager, x4717 mottll@grinnell.edu
Bob Groenendyck, CERA Field Technician, groenend@grinnell.edu
Kathryn Vincent, Teaching Assistant, vincentk@grinnell.edu

COURSE DESCRIPTION

As a way to explore how biologists ask questions and develop answers to them, this class will focus on the biology of the prairie and the problems of prairie restoration. It will be taught in "workshop" format primarily at Grinnell College's Conard Environmental Research Area (CERA), where we will use the prairie and savanna restorations as our laboratory. You will be required to formulate research questions based on your reading of the literature, design experimental or observational studies to test your hypotheses, and report on their findings in written and oral forms.

A note about the philosophy of this course: The primary goal of this course is to help you understand to how biologists ask questions, test their ideas and communicate them. Our method to achieve this goal is *total immersion*. Given that scientific knowledge is constantly changing, our philosophy is that the best thing we can do for you is to help you develop the intellectual tools to evaluate statements by scientists and recognize when you use scientific thinking in your daily life. Unlike conventional courses, we have no defined set of topics we are required to "cover" by the end of the semester. However, this does not mean that facts (i.e., results of observations) and theories are unimportant! Rather, we hope to demonstrate that they are crucial to good science and its application to the rest of our lives. *See the attached statement about Bio 150 for background on how all sections of Bio 150 are related to each other.*

This new way of teaching introductory biology was funded by a grant from the National Science Foundation. One of our obligations for this grant is to determine how well these techniques work to help students learn. We appreciate your participation in these assessment activities. Your responses will remain confidential.

COURSE REQUIREMENTS

Meetings: On most Mondays and Wednesdays (*in bold on schedule below*), we'll be traveling to the Conard Environmental Research Area (CERA), Grinnell College's biological field station. **On these days we'll leave PROMPTLY at 1 PM in front of the Science Building. Don't be late or you'll be left behind!** We'll arrive back at 4:05 PM. On Fridays and other days we don't go to CERA, we'll meet in Science 1822-3 at 1:15 pm, unless otherwise announced.

Because of the need to concentrate on fieldwork before the coming of winter weather, we will be busy and outdoors during much of the beginning of the course. Later in the semester we will have more time to consider what we learn from restoring prairies and to work on the public products of our investigations. The general outline for the course is below, with travel days to CERA or elsewhere **IN BOLD**, and *major assignments in italics*:

Week	Monday	Wednesday	Friday
1			27-Aug Introduction
2	30 Aug Intro to prairies and CERA	1-Sept Vegetation sampling (CERA)	3-Sept Lecture/Discussion
3	6-Sept Prairie remnant field trip	8-Sept Vegetation sampling (CERA)	10-Sept Lecture/Disc.
4	13- Data analysis <i>Quiz 1</i>	15-Sept <i>Oral presentations</i>	17-Sept. Lecture/Disc.
5	20-Sept Sample fire experiment at CERA	22-Sept Sample Fire experiment (CERA)	24-Sept Lecture/Discussion
6	27-Sept Data analysis – <i>Quiz 2</i>	29-Sept Lecture/Discussion and paper workshopping	1-Oct Peer review of paper draft
7	4-Oct Independent projects (CERA) <i>Paper due</i>	6-Oct Independent projects (CERA)	8-Oct <i>Midterm exam</i>
8	11- Independent projects (CERA)	13-Oct Independent projects (CERA)	15-Oct No class <i>Project Proposal due</i>
9	25-Oct Independent projects (CERA)	27-Oct Independent projects (CERA)	29-Oct Lecture/Discussion
10	1-Nov Independent projects (CERA)	3-Nov Independent projects (CERA)	5-Nov Lecture/Discussion
11	8-Nov Independent projects (CERA)	10-Nov Independent projects (CERA)	12-Nov Lecture/Discussion
		11- Nov (6:30-7:45 pm) – <i>Project Discussions with other Bio 150 sections</i>	
12	15-Nov Project analysis <i>Quiz 3</i>	17-Nov -- Project analysis and writing	19-Nov -- Lecture/Discussion
13	22-Nov Project analysis and writing	24- No class <i>Project paper 1st submission due</i>	26-Nov – No class (Thanksgiving Break)
14	29-Nov Lecture/Discussion	1-Dec <i>Peer review</i>	3-Dec <i>Final project paper due</i>
15	6-Dec Poster prep – <i>Poster due by end of day</i>	8-Dec No class <i>Poster session Dec 9 11AM-1PM</i>	10-Dec Final Discussion

Final Exam 9am on Thursday Dec 16th

Each Friday, I will give you an assignment sheet with details on reading assignments and study questions that will help you prepare for class. These can also always be found on the Class Web Page. Guidelines for papers, peer reviews and oral presentations will be given to you well in advance.

Important policies:

- Please silence your cell phone when entering the class or lab and put it away. (But keep them handy in the field!). Please do not check or (OMG!) text on your phone during class or lab times. Personal or college laptops should be used only for class-related work during class or lab times.
- Late assignments will be accepted with a penalty of one letter-grade/24 hours. Penalty-free extensions will be given in the case of illness documented by the health center.
- For the first scientific paper, I allow an optional rewrite, following a consultation with me about my feedback. The highest possible grade on a rewrite is 88%. I am happy to work with you IN ADVANCE on your papers as well – please make an appointment or come to my office hours.
- Please let me know in advance if you need to miss class because of a conflict with an important activity or religious observance. I will try to make reasonable accommodations, but not at the last minute.

Texts: There are two required texts, *Biological Science Vol. 2* (3rd Edition) by Scott Freeman, and *Konza Prairie* by O.J. Reichman. These are both best obtained from online retailers of used textbooks. We will also be reading a number of other short articles, which will be on reserve in the Science Library or available electronically through the class website.

Supplies: Aside from appropriate field attire, you should purchase at least one sturdy, waterproof field notebook from the bookstore.

Grades: Class grades will be based on the following assignments:

Vegetation Analysis Oral Presentation	(group)	10%
Fire Experiment Scientific Paper		10%
Project Proposal	(group)	5%
Project paper	(group)	15%
Project Peer Review		5%
Project Poster	(group)	10%
Notebooks and homework		5%
Quizzes (3)		8%
Midterm exam		12%
Final Exam		20%

Exam and quiz questions will gauge your ability to use biological terms correctly, explain major ideas from the readings, interpret data and propose tests of hypotheses. The keys to doing well on them are (1) do the assigned readings before coming to class, (2) participate in class, and (3) practice writing about the ideas after class. Exam questions from previous years are available on the class website, and quizzes are meant to help you practice taking exam questions in advance. Work with me and your TA to practice the skills of answering exam questions! We love it when you do well!

Final letter grades will be determined in the following manner:

93-100% A	87-90% B+	77-80% C+
90-93% A-	83-87% B	70-77% C
	80-83% B-	60-70% D
		< 60% F

However, you must have an average of >70% on the non-group assignments to receive a C or better in the course. I do not use a grading curve because I believe it discourages students from studying together. Helping each other learn is a good thing. I encourage you to form study groups or work with me on the subject matter of the course. I will consider improvement over the semester and good class citizenship (e.g., being prepared, participating in class discussions, asking good questions) in determining your final letter grade. If you are worried about your performance in the class, please come talk to me during office hours. *I have very high expectations of you – and nothing is more important to me than helping you reach and surpass them.*

Safety: When we are at CERA, you may be working in remote areas where I'm not present. If this occurs, make sure you know where your group members are at all times. I will carry a cell phone (641-275-0937) as does CERA technician Bob Groenendyck (641-990-3108).

Prairies are safe places to work, but some simple precautions will make you more comfortable in the field and afterwards:

- Long pants and closed shoes are a must!
- Wear a hat -- I often wear a big, dorky one that protects me from getting a sunburn.
- Long sleeves aren't a bad idea -- some plants have scratchy hairs, and, if you work in the woods, mosquitoes might be about.
- Bring a raincoat when there is a chance of rain. We may stay out in it unless it is dangerous.
- Protect yourself from ticks and chiggers -- tuck your pants in your socks and/or use bug spray and take a shower when you get back.

If you have a medical condition that I should know about in order to respond appropriately in the field, please let me know. In particular, you should let me know if you are hypersensitive to stings from Hymenoptera (i.e., bees and wasps).

Disability accommodation: I am personally committed to making reasonable accommodation for all documented disabilities. Please don't hesitate to speak with me early in the semester if you have such documentation. If you don't, but wish to obtain it, contact Joyce Stern in the Academic Advising, who can consult with you on the process. My goal is to make my classroom challenging *and* welcoming of every person.