

**BIOLOGY 150.04: Introduction to Biological Inquiry
What Does It Mean to Be a Plant?**

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Office hours: M through F, 9:00-10:00 am

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Course Description:

Many people regard plants simply as 'green animals'. While there are many important similarities between plants and animals at the cellular and sub-cellular levels, there are profound differences as well, differences shaped by the migration of plants from the oceans onto dry land. This migration required a variety of evolutionary adaptations, anatomical, physiological and developmental, in order to survive in this new, harsher environment. Students will explore these adaptations by asking questions about the structures, physiological functions and developmental strategies plants evolved to meet this challenge. They will design experiments, analyze data and communicate their results in the form of scientific papers or oral presentations as they endeavor to understand what it means to be a plant. This course will be taught in a workshop format, integrating lecture, laboratory work and discussion in each class period.

Specific goals:

Through the activities described above, we hope that students will gain an understanding of how biologists ask questions, test their ideas and communicate their results. Unlike more conventional introductory biology courses, there are no prescribed topics or amounts of information that need to be covered. While

it is expected that you will learn much information, the nature of this course will focus on developing your understanding of the process of biological inquiry. Besides broadening your perspective on how people make sense of the natural world, this course should prepare you well for more advanced work studying biology and biological chemistry. This new way of teaching introductory biology is funded in part by grants from the National Science Foundation and the Howard Hughes Medical Institute. Part of our obligations for this grant include determining how well this approach works to help students learn. We appreciate your participation in activities that will be used for assessment of the course.

Course materials:

There is no required text for this course. A number of introductory biology and botany texts are on reserve in Burling Library for your use. Any of them will have the basic information you need on a given topic. There is not a single reference that is the site of received knowledge so don't be afraid to browse through more than one text if I assign reading on a specific topic. Other materials will be made available on reserve in Burling Library. One text that is on reserve in Burling Library is *Biology*, 7th edition by Campbell and Reece.

Investigations: A Handbook for Biology and Chemistry Courses has been prepared by the Grinnell College Biology and Chemistry faculty and you will be given a copy. You must read this handbook carefully and apply the relevant information to your work in this course. You also need to purchase a lab notebook that is sewn (i.e., not a binder or spiral bound) for use in the laboratory. This item is available at the bookstore.

The lab notebook should be regarded as a diary of what you see and do each time you enter the laboratory and should contain a careful record of your observations, experimental results, and conclusions regarding the work that you do. All data that you collect from your experiments should be recorded here even if I ask you to fill out a data sheet to hand in. Your notebook is **the** ultimate repository of all such valuable information. I may collect these notebooks at any time so be sure to keep them up to date.

This course has its own web page at:

<http://web.grinnell.edu/courses/bio/F07/bio-150-04/>

Please check it frequently for the latest information regarding assignments, deadlines, etc. I will be using it as an important way of communicating with you. There are also some very important sources of information that you can access from the web page.

Course work:

A wide variety of types of coursework will be graded. To highlight the importance of scientific communication, oral and written communication skills will be emphasized. Major assignments will include a public poster session on Thursday, December 7, and a major paper written in the scientific format due later in the semester. A final exam covering specific information as well as your general understanding of the scientific process will be given on Wednesday, Dec. 19, at 2:00 pm. Less significant quizzes and written assignments will be given throughout the semester. Participation in discussion and lab citizenship are other components of the grading system. **Please note that all graded work should be the sole product of the individual turning it in unless otherwise specified.**

Approximate grading scheme:

Quizzes and exams	250 pts	
Other assignments	~200	
Lab citizenship and discussion	80	
Scientific Papers (2)	200	
Final Project Poster	50	
Final Exam	<u>150</u>	(Wed., Dec. 19, 2:00 pm)
	~850	

Note: the final exam date is not negotiable!

Attendance and participation in class is required. If student work is missed with an excuse verified through the Health Center or the Student Affairs

office, the work will generally not be made up; the total number of points available to you will be reduced and your course grade will be determined by the percentage of the available points which you obtained. Exams or in-class assignments missed without a verified absence will be graded as 0 points.

Assignments turned in after the deadline will have 5 points deducted for each day late. **Be forewarned:** computer problems are not a legitimate excuse for late work. **If an assignment is due at the beginning of class and you are late for class, your assignment counts as one day late.**

Grades will be assigned on the scale provided and not on a curve. There will not be a pre-determined number of A's or B's in the course and you will not be competing with your fellow students for grades. At my discretion your grade may be raised for reasons such as significant improvement during the semester.

Note: At any time during the semester you may calculate what your approximate grade in the course will be by adding up the total number of points you have earned, dividing by the total possible points up to that time and comparing the percentage calculated to the scale below:

90-100%	A
87-89%	A-
84-86%	B+
80-83%	B
77-79%	B-
74-76	C+
65-73%	C
60-64%	D
Below 60%	F