

Why are there so many parts of this course?

Rationale for Biol-1 Elements, revised Fall 2016

Our course objectives are diverse, addressing topics from core scientific concepts to current events. Because of the varied goals for Biol-1, I use multiple assignments rather than rely solely on exams. I put together this document to illustrate how parts of the class fit together. Course components are listed below (with their associated course objective # in parentheses) and short descriptions of their purposes.

General course objectives

This course will help you develop the scientific knowledge and skills necessary to engage in real-world issues that have a biological component. This will involve:

Applying, analyzing, and evaluating scientific thinking, reasoning, and values.

1. Finding and critically evaluating information.
2. Distinguishing questions that can be addressed scientifically from those that cannot.
3. Using scientific thinking to creatively solve problems and make informed decisions.
4. Developing effective communication strategies to reach specific audiences.
5. Examining the impact human activities have had on the environment and applying an understanding of biological processes to current events and citizenship.

Applying, evaluating, and creating within scientific processes (i.e. physically, in lab).

6. Identifying and applying basic components of the scientific method in a laboratory setting.
7. Using appropriate methods and technologies to obtain, analyze, and transfer data.
8. Collaborating within diverse groups to produce meaningful work.
9. Experiencing the excitement inherent in science and demonstrating a motivation to continue learning about a broad range of biological topics outside the classroom.

Applying, and generating biological themes.

10. Articulating an understanding of biological processes using scientific terminology.
11. Demonstrating the ability to comprehend current events related to a broad range of biological topics.
12. Recognizing unifying theories and concepts in biology (e.g. structure & function, ecological relationships, organismal diversity & inheritance) within an evolutionary context.

Course elements

Information coming in

Textbook, other articles (1, 5)
Lectures, discussions (2, 5)
Reading scientific articles (1, 9)

Description of purpose

Introduce ideas.
Introduce ideas; discuss examples.
See how scientific ideas can be shared.

Connecting and communicating ideas

Pre-lecture assignments (1, 3)
Field observation (4, 9)
Lab exercises (2, 3, 6, 7, 8, 9)
Reports on articles (4, 9, 10, 11)
Current event presentation (4, 9, 10, 11)

Engage material before class discussions.
Practice making observations and developing questions.
Practice collaboration, lab procedures and information analysis.
Practice written communication, and explore personal interests.
Practice oral communication, and explore personal interests.

Checking for understanding

Lecture exams (10, 11)
Lab exams (10, 11)

Check progress. Get motivation and feedback.
Check progress. Get motivation and feedback.

Or, if you prefer a flowchart to show connections:

