

**Elements of the Assessment Process**  
**Form E-1-A for Boston College Departments/Programs**

**Department/Program** Biology Department Core

- 1) **Have formal learning outcomes been developed? What are they?** (What specific sets of skills and knowledge does the department expect its majors to have acquired before they graduate?)

Students completing the Natural Science Core will:

1. expand their understanding of the principles, body of knowledge and investigative strategies that comprise science and its technological applications;
2. develop a scientific literacy that will promote curiosity, respect for the scientific method, and general awareness of the limitations of scientific conclusions;
3. recognize the role of scientific discovery, past, present and future, in interrelated topics such as human health, societal well-being and planetary sustainability; and
4. appreciate the role of science in defining their relationship with the natural world and their position within the cosmos.

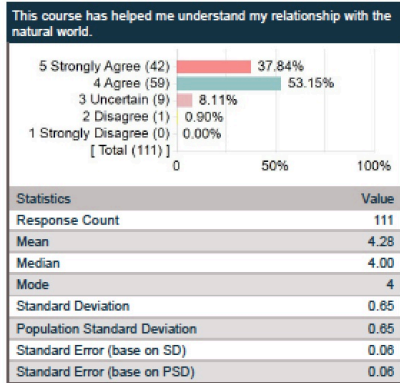
- 2) **Where are these learning outcomes published? Be specific.** (Where are the department's learning expectations accessible to potential majors: on the web or in the catalog or in your dept major handouts?)

Arts and Science CORE Website

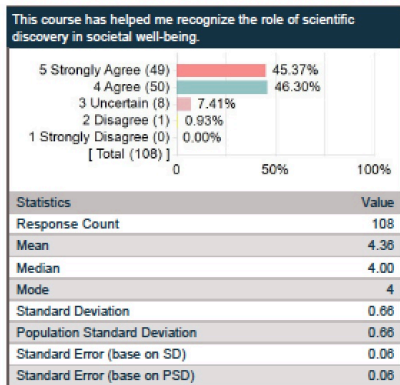
- 3) **Other than GPA, what data/evidence is used to determine whether graduates have achieved the stated outcomes for the degree?** (What do you use to assess which of the student learning outcomes are being achieved more or less well?)

A) Student survey, BIOL1100 F20 (General Biology) (see next page)—

**This course has helped me understand my relationship with the natural world.**



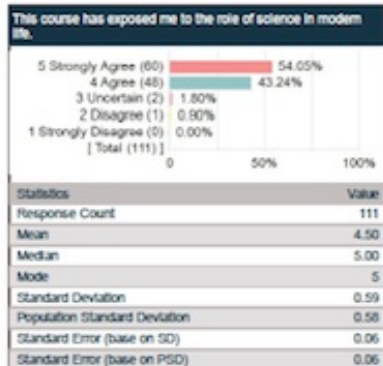
**This course has helped me recognize the role of scientific discovery in societal well-being.**



**This course has helped me to understand that science is a human endeavor, and has introduced me to some important scientists and their discoveries.**



**This course has exposed me to the role of science in modern life.**



B) Questions added to final exam, BIOL1100 F20 (not used in exam or final grade)

1. What can you conclude from the great increase in the presence of **antibiotic-resistant** bacteria in modern hospitals?

- a) Treatment with antibiotics directly CAUSES mutations that give bacteria resistance to antibiotics.
- b) Treatment with antibiotics SELECTS for bacteria that already have mutations that provide antibiotic resistance.
- c) Too-frequent hand washing with ordinary soap CAUSES antibiotic resistance.

**79% correct**

2. Which of the following statements is **FALSE** concerning fundamental aspects of life on earth?

- a) On earth today, all cells have come from the division of other cells ("*Omni cellula e cellula*"), not through "spontaneous generation."
- b) The biochemical reactions that take place in cells today are **NOT** consistent with the known laws of chemistry and physics.
- c) The properties of our genetic code provide evidence that all life on earth is related, and is descended from a single common cellular ancestor.

**82% correct**

3. Which of the following is **CORRECT** concerning our current knowledge of life in our galaxy (that is, in the *Milky Way* galaxy)?

- a) Many planets in our galaxy contain, or have contained, life as we know it.
- b) No other planets in our galaxy, besides Earth, have life as we know it.
- c) The question of life on other planets in our galaxy is currently unanswered, as we do not have enough certain evidence (proof) one way or the other.

**72% correct**

4) **Who interprets the evidence? What is the process?** (Who in the department is responsible for interpreting the data and making recommendations for curriculum or assignment changes if appropriate?)

The instructors in the course - examine student responses and align with performance expectations.

5) **What changes have been made as a result of using the data/evidence?** (Have there been any recent changes to your curriculum or program? Why were they made?)

**N/A** (Plan for next offering: emphasize scientific reasoning and literacy more, in light of current pandemic.)

6) **What evidence do you have that the changes have resulted in improved learning outcomes?**

**N/A**

7) **Date of the most recent program review.** (Your latest comprehensive departmental self-study and external review.)

**2019**