Department of Biology: Assessment and Improvement, 2013

Department: Biology

Assessment Coordinator: Deb Donovan

Departmental Mission: The mission of the Biology Department is to provide an outstanding learning environment that integrates education, scholarship, and service in order to actively engage students in the biological sciences and foster their development as lifelong learners. Successful graduates of our Department will understand fundamental biological principles in depth, will have laboratory and field skills to answer biological questions, will have enhanced critical thinking and quantitative skills, will be able to communicate precisely and analytically in written and oral forms, and will be able to engage independently and collaboratively to be thoughtful and productive contributors to society.

Department Student Learning Outcomes: Upon graduation, Biology majors will

1. have in-depth knowledge from the major areas of biology (ecology, genetics, evolution, cell and molecular biology, and organismal biology) and be able to integrate principles from these areas.
2. be proficient in a variety of science practices including acquiring laboratory and field skills necessary to answer biological questions, communicating precisely and analytically in written and oral forms, and engaging collaboratively in the scientific process.
3. have effective quantitative reasoning skills.

GUR Student Learning Outcomes:

1. Use quantitative and scientific reasoning to frame and solve problems
2. Apply tools of technology, with an understanding of their uses and limitations

<table>
<thead>
<tr>
<th>Assessment Measures</th>
<th>SLO’s Assessed</th>
<th>Use of the Information</th>
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<tr>
<td>Pre- and post-assessments of quantitative skills in core biology classes.</td>
<td>3</td>
<td>The first set of data on the results of the targeted practice has just been collected and is currently being analyzed. The second set of data is currently being gathered. Preliminary analyses indicate that the targeted practice improves students’ quantitative skills, especially low achieving students. When the second set has been collected and analyses are completed, the graduate student conducting this experiment will present her conclusions to the biology faculty. We will discuss her results at an assessment faculty meeting (most likely in the fall, given the students’ timeline)</td>
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<td>Alumni survey</td>
<td>3</td>
<td>Biology alumni report being very satisfied with how the department helped them develop their ability to apply quantitative principles and methods (4.6 out of 5 on a Likert scale).</td>
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Program Changes Based on Assessment

Students in one class (Biol 205) are getting targeted practice of four quantitative skills as part of their lab experience: manipulating exponents; interpreting graphical information; manipulating fractions, proportions, and percentages; and understanding the size of numbers. If this proves to be effective, we will
incorporate this practice into Biol 205 on a permanent basis. We will also explore ways to improve quantitative skills in other classes by adding targeted practice into these classes.