### General Education Natural Science Assessment (Outcome #1)

Instructions: Please provide the information requested in the form below and return to P. Michael Fox, Vice Provost for Academic Affairs, 618 Allen Administration Building. Fall assessments should be submitted in January 2013; Spring assessments in May 2013.

<table>
<thead>
<tr>
<th>Department:</th>
<th>BIOLOGY</th>
<th>Course Reporting Data:</th>
<th>BIO 281 AN HUMAN BIOLOGY [SPRING 2013]</th>
</tr>
</thead>
</table>

There are two General Education student learning outcomes for the Natural Sciences. Assessment data for the two outcomes are to be submitted on separate report forms.

#### Natural Science Student Learning Outcome #1:

**Students are able to demonstrate their knowledge of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis.**

#### Sources of Assessment Data on Outcome #1:

Data can be test scores from portions of exams testing an understanding of the scientific method; data can also be scores on laboratory reports that evaluate students’ understanding of scientific method; or other sources as specified below.

#### Semester(s) in which reported assessment data were collected: Fall 2012 ☐ Spring 2013 ☒ Both ☐

#### Below briefly describe how you collected these assessment data.

What specific assessment methods—exams, assignments, or instruments did you use to acquire the data reported.

Six multiple choice questions related to an understanding of the nature of science, scientific method, need for verification of hypotheses, evaluation of evidence, how science differs from non-science, were graded separately from the remainder of the examination. Number of students who answered correctly and the percent of these students were calculated according to the scale listed below.

Enter the total number of students from whom you collected the assessment data.  
N = 63

CHECK: Data are totals from a multi-section course? ☐ Data are only from one course/section? ☒
Enter your benchmark or criterion of success for this assessment in the row below.

A total of 70% of students will achieve a score qualifying them for the exceeded and/or met categories.

In the spaces provided below, enter the number of students (and percent of total) who scored in each of the achievement levels indicated:

<table>
<thead>
<tr>
<th>Achievement Level</th>
<th>Number of students who reached this level</th>
<th>Percent of total students assessed who reached this level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceeded Criterion (A/B) 80-100 %</td>
<td>49</td>
<td>79.0%</td>
</tr>
<tr>
<td>Met Criterion (C) 70-79.99%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Approached Criterion (D) 60-69.99%</td>
<td>4</td>
<td>9.7%</td>
</tr>
<tr>
<td>Did Not Meet Criterion (E) &lt;59.99%</td>
<td>7</td>
<td>11.3%</td>
</tr>
</tbody>
</table>

Did your assessment show that the benchmark or criterion of success was reached? Yes [x] No [ ]

Closing the Loop Recommendations: After examining these assessment results, do you find any weaknesses in student performance on this specific student learning outcome that you plan to address by changes in course content, emphasis, instructional approaches? If so, please describe the need for improvement and what you will do to achieve your designated criterion of success. Also, if you have reached your desired criterion of success, should you raise the performance expectations on this outcome?

The class exceeded the 70% criterion of success. These students seem to understand the nature of science and can differentiate scientific ways of looking at the world from non-scientific ones. While the 11.3% in the not-meeting category is low, it is troubling considering the amount of time spent on this material. Looking at the actual test results show that differentiating between theory and hypothesis is a source of error for some as is the need to support “facts” with data. I believe that more attention to these two points would improve performance on this assessment. It would probably be reasonable to elevate the criterion of success to 80% met or exceeded for the next assessment in spring 2014.