**Assessment Committee Feedback for the Biology Department Assessment Report**

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**Summary of Biology’s Assessment Plan**

The Biology Department's mission, in short, is to provide students with an understanding of, and an appreciation for, the fundamental mechanisms that underlie all living systems from molecular biology through ecosystem ecology.  The biology major is unique in the fact that is only has two required courses for all of its students. While this requirement simplifies the student’s navigation of degree requirements and allows for customization of the major, it also presents a challenge to the department in assessing content knowledge and skills for all its majors. Nonetheless, the Biology department has identified a clear set of student outcomes:

**I.  Content goals**

**Goal 1.** Our students will understand and apply fundamental biological principles from each of the following four major areas of biology - cell biology, molecular biology and genetics, organismal biology, and ecology and evolution.

**Goal 2.**  Our students will acquire in-depth knowledge of the major areas of biology and be able to integrate principles from these areas.

**Goal 3**.  Our students will acquire scientific investigation skills in laboratory and field courses necessary to apply the methods that biologists use to answer biological questions.

**II.  Process goals**

**Goal 1**.  Our students will develop enhanced critical thinking skills.

**Goal 2.** Our students will engage in the scientific process.

**Goal 3**.  Our students will communicate effectively in written and oral forms.

At the moment, these outcomes are primarily assessed through an ETS field test given to graduating seniors annually, and select first year students every few years (as a comparison group). While the Department has other instruments in place for assessment of these skills (rubrics for presentations, pre- and post-tests in BIO 195, laboratory quizzes, etc.) the collect data does not seem to be tracked or utilized as it could be by the department.

In addition to the ETS field Test, in 2010 the department began an active effort to informally track graduated majors.

**Outcomes of Assessment**

*Major Exam*

The ETS field test provides student scores in several core sub-disciplines of biology and well as in various skill sets, called indicators. This provides the department with valuable information regarding their majors’ content knowledge, and how their students compare to national norms. While this information is valuable and can be the basis for departmental decisions, it is my understanding that national data may be skewed due to requirements of a passing grade at some institutions. That being said, however, it appears that the Biology department has a grounded approach in how to use the data provide by the ETS exam to guide departmental decisions.

One of the most striking outcomes from Biology’s use of the ETS exam is their identification of a weakness in Analytical Skills (not clearly defined by ETS) amongst their seniors, and a departmental wide effort to improve these score by targeted exercises in *every* course the department offers each semester. In addition to creating these exercises, every professor has tabulated the results achieved by the students in their classes. This is an outstanding response and we commend you for it!

One difficulty in using the ETS exam to track student knowledge over time is that it changes every 5 years. This creates two problems for the biology department. First, as the exam focus changes, so do the students’ scores as indicated by shifts in their national percentile rankings. Second, it only allows biology to make direct comparison between entering students and graduating students once every 4 years.

*Graduate Tracking*

The informal tracking of graduated majors in recent years is a great start! Using direct and indirect methods to determine where your graduates are and what they are doing is an ideal first step to ensuring that your program is providing your graduates with the skills they need.

**Recommendations**

The assessment of your students and your programs that you are performing is a great start. However, the most effective assessment plans make strategic use of both direct and indirect measures[[1]](#endnote-1), and collect data at the beginning, during the program of study, and at the end. This gives a richer sense of where and when your work contributes strongly to learning goals and where improvements might be made. That being said, strong assessment plans are also manageable! All data need not be collected annually; some can be done every other year. And you may choose not to measure for all of your learning goals right now. The data that you collect should allow you to make claims that you can (a) intellectually, ethically stand behind and (b) find resources to measure.

The following recommendations are meant as conversation starters for departmental discussions on improving you assessment plan.

1. Given that the ETS exam changes every 5 years, which results in the aforementioned difficulties, it is recommend that you consider creating a short, i.e., 10 question, departmental assessment piece that could be administered to your graduating seniors *with* the ETS exam, as well as to your entering students, say at the end of BIO 210 (or the terminal required class once your new intro sequence is developed). This would allow for direct comparison between entering and graduating seniors annually. Additionally, it can act as a cornerstone metric for comparison to changing ETS scores, verifying that differing results are the product of changing tests.

2. Your third content goal indicates that “students will acquire scientific investigation skills in laboratory and field courses necessary to apply the methods that biologists use to answer biological questions.” Yet, you are either not assessing this goal or have yet to report on your assessment. Therefore, it is recommended that you track *existing* assessment pieces that occur in laboratory and field courses to ensure that you are reaching/maintaining your learning goals. For example, each semester you can select one lab section of BIO 210 and either one upper level laboratory course or one upper level field course, and track the student performance on a lab quiz, lab final, or lab practical that is currently used in those classes. It is suggested that you track BIO 210 because it is the entry course to your upper level courses. By tracking two classes a semester, and alternating between field courses and laboratory courses as the upper level course (one each per year), you will create qualitative data that can help you ensure that you are reaching your student outcomes throughout their studies.

3. You have an entire set of process skills listed as student outcomes. In your 2009 report you indicate that you have rubrics for assessing student presentations and writing. We encourage you to identify opportunities where such presentations occur and track the skills of your students using the mentioned instruments. This could be done infrequently, e.g., every other year, and still provide you with meaningful data.

4. As mentioned previously, we commend you on beginning your informal assessment of majors. As you move forward in your assessment we encourage you to consider how you can collect data in the future that will be meaningful to department level decisions. While it is wonderful to have reflections and feedback from students graduated long ago, given the number of students who graduate annually with majors in biology, this might be difficult to accomplish. However, creating a strategy to keep in touch with current students as then migrate away from Albion College will create the mechanism to collect this data in the future. It might be a slow process, but it will be well worth the effort.

1. In assessing student learning, there are direct and indirect sources of evidence. Direct evidence is clear and convincing information about student learning, such as: tests, examinations, papers, projects, assignments, field experience assessments, and portfolios. These are particularly strong sources of evidence especially when accompanied by articulated standards (such as a rubric). On the other hand, with indirect evidence there is room for other factors to affect the outcomes either positively or negatively. Examples of indirect evidence include: retention, graduation, and placement rates (may be impacted by economic conditions or college policies); surveys of students and alumni (may indicate feelings about college experience); grades (standards and even content may differ across instructors and institutions). [↑](#endnote-ref-1)