“Closing the Loop” Reporting Template
College of Science & Technology

Department: Biology
Assessment coordinator: Deb Donovan

Departmental Mission: Our mission is to provide an outstanding learning environment that integrates education, scholarship, and service to actively engage students in the biological sciences and to foster their development as lifelong learners.

Outcome Assessment Activity #1
Jan. 2007 The Department finalized its Outcomes Assessment Plan. The key elements of the plan include enumeration of the Content and Process Goals for our students, the Learning Objectives for each Goal, the Measurable Learning Outcomes for each Learning Objective, and identification of the courses in which particular Learning Objectives are experienced.

Result: Faculty members reached a common understanding of our Content and Process Goals and on their course syllabi began to identify the particular Goals that were addressed by the course.

Outcome Assessment Activity #2
March 2009 Department Retreat to discuss courses required of most majors (Biol 204, 205, 206, 321, 323, 325, and 432). There were also meetings of instructors of these courses prior to the Retreat to decide upon common content for these required courses. This had been done several years previously for the 200-series, but not for the 300-level courses or 432.

Result: The faculty was made aware of the content of all required courses. Overlap in coverage of particular topics in different courses was discussed extensively and the coverage of these topics was revised for some courses. The Biol 206 lab, particularly the animal portion, was also discussed and targeted for future revision. There is now more uniformity in the content of each required course.

Outcome Assessment Activity #3
Academic year 2009-2010 Multiple faculty meetings were devoted to discussion of which courses to assess and how to do the assessment.

Result: We decided to assess our learning objectives for the courses that are required of most of our majors (Biol 204, 205, 206, 321, 323, 325, and 432). We recognize that for our 200-level courses (and to some extent the 300-level courses) we will be assessing non-majors who represent a large fraction of the students in these courses. However, these courses are the only ones common to most majors.
We also decided to use the assessment tool developed by David Bover to quantify results. To do this, the groups of faculty members who teach the required courses met to assign values to each learning objective (see Appendix I). Then, individual instructors assigned values for each learning objective for the assessments done in their individual sections.

Outcome Assessment Activity #4

Spring 2010 Our assessment plan was implemented. Each of us sent student scores for each assessment item to Deb Donovan to enter into common assessment spread sheets for analysis.

Result: Pasted below is the preliminary analysis of our assessment analysis. Also see Appendix I. Deb Donovan is currently working on data analysis.

Program Improvements Made on the Basis of Assessment Results:

One element of our Outcome Assessment Plan is to utilize an iterative approach for our learning objectives. For example, one learning objective is for students to explain and apply their understanding of the principles of evolutionary biology and the phylogenetic relationships of the major groups of organisms. This objective is addressed in Biol 204, 205, 206, 323 and 432. However, some instructors in Biol 205 and 323 did not address this objective as extensively as was thought necessary by the Department. This is being rectified. All faculty members are now aware of the necessity of covering specified course objectives in their courses.

Analysis of the extent to which the Core Courses address the Biology Course Outcomes

Background

The faculty of the Biology Department worked together to determine the extent to which the core and breadth courses address the course outcomes (COs) that we developed during the 2008-2009 academic year. In discipline groups, we determined whether each course strongly addressed a CO (rank of 3), moderately addressed a CO (rank of 2), or weakly addressed a CO (rank of 1). These rankings will be used to determine the extent to which our classes are assessing each CO and the extent to which our students are meeting the COs.
Analysis

1. All of the Program Outcomes are assessed in multiple core and breadth courses. All of our majors will further meet these outcomes in their 400-level specialty courses that they take for their emphases.

2. All of the Biology course outcomes are assessed in one or more of the core and/or breadth courses. Most are assessed in several (3-7) courses. Only our core and breadth courses were assessed since all of our majors take these courses. We expect that students will further master many, but not all, of the course outcomes in the specialty courses that they take for their emphases.

3. One course outcome is only assessed by one course. CO8 (Students will be able to explain and apply their understanding of the cellular basis of physiological processes in Biol 323.

4. Three course outcomes are only assessed in two courses.
   C09 (Students will be able to explain and apply their understanding of the cellular basis of developmental processes) is only assessed in Biol 323 (moderate) and Biol432 (weak). CO12 (Students will be able to perform a variety of field techniques) is only assessed in Biol 204 (weak) and Biol 326 (strong). CO25 (Students will be able to evaluate the work of their peers) is only assessed in Biol 324(moderate) and Biol 326 (moderate).

5. One course outcome is assessed in three courses but only weakly in two of them.
   C024 (Students will be able to place their research in a broader scientific context based on current literature) is assessed in Biol 323 (weak), Biol 324 (weak), and Biol 326 (strong).

Suggestions to bring to the faculty

1. Although our assessment only covered the core and breadth courses, it is important that each course outcome be assessed in more than one course that all students take. We should determine whether CO8 can be assessed in any other courses (Biol 324?) and develop assessment(s) to address this.

2. We should determine whether there is a need to further assess the three COs that are assessed in only two courses. It may be important to further assess C09 since it is only weakly assessed in one of the two courses. C012 may not be important to assess to a greater degree since the students that need these skills will further develop them in 400-level courses. We should determine if this is indeed the case. We should determine whether we want to incorporate and assess C025 in other core or breadth courses. Alternatively, we should determine the extent to which this CO is assessed in 400-level courses and make sure it is assessed in a variety of courses such that students in different emphases will get a chance to practice it. This is a higher-level skill that is important for all of our students.

3. We should determine whether there is a need to further assess the CO that is assessed in three courses, but only weakly in two of them.
4. We should determine whether we want to incorporate and assess C024 in other core or breadth courses. Alternatively, we should determine the extent to which this CO is assessed in 400-level courses and make sure it is assessed in a variety of courses such that students in different emphases will get a chance to practice it. This is a higher-level skill that is important for all of our students.