Plan for Assessment of Student Learning Outcomes

The University of New Mexico

A. College, Department and Date

1. College: Arts and Sciences
2. Department: Biology
3. Date: 24 Feb 2015

B. Academic Program of Study

B.A. Biology

C. Contact Person(s) for the Assessment Plan

Marcy Litvak, Associate Professor and Associate Chair, Biology

D. Broad Program Goals & Measurable Student Learning Outcomes

1. Broad Program Learning Goals for this Degree/Certificate Program

A. To understand a wide range of basic principles in modern Biology

B. To comprehend the scientific method and its application to problems in Biology

C. To learn how to interpret and present biological data in written and oral formats

2. List of Student Learning Outcomes (SLOs) for this Degree/Certificate Program

A.1. Students will demonstrate an understanding of key principles in various biological sub-disciplines that span molecular to ecosystem levels of organization

B.1. Students will able to design, test, and evaluate scientific hypotheses

C.1. Students will be able to summarize and interpret key findings of research papers

C.2. Students will demonstrate a capacity for analyzing biological data and for producing coherent written and oral presentations

E. Assessment of Student Learning Three-Year Plan

Described below is the plan for the next three years of assessment of program-level student learning outcomes.

1. Student Learning Outcomes

University of New Mexico Student Learning Goals

Program SLOs	Knowledge	Skills	Responsibility	Program SLO is conceptually different from university goals.
A.1. Students will demonstrate an understanding of key principles in various biological sub-disciplines that span molecular to ecosystem levels of organization	✓	✓	✓	
B.1. Students will able to design, test, and evaluate scientific hypotheses	✓	✓	✓	
C.1. Students will be able to summarize and interpret key findings of research papers	✓	✓	✓	
C.2. Students will demonstrate a capacity for analyzing biological data and for producing coherent written and oral presentations	✓	✓	✓	

2. How will learning outcomes be assessed?

A. <u>What</u>:

i. This assessment focuses mainly on our core sequence since the core plays a key role in providing the intellectual foundation needed for more advanced courses in Biology. Moreover, as opposed to a highly diverse selection of post-core courses that students may take while completing our program with distinctly different emphases, the core is the only set of classes with a standardized curriculum that all majors must take. As

described further below, assessments of core SLOs will be used to assess program **SLOs A.1-C.2**.

To assess **SLO A.1.**, **B.1. and C.1.,** a list of appropriate questions for evaluating student knowledge of fundamental biological principles will be generated by faculty in each of our four core courses (Biol. 201-204). One to several questions will be selected to assess **A.1** and **B.1** for 201 in year 1, and **A.1, B.1,** and **C.1** in 202, 203 in year 2 and 204 in year 3, in order to test both core-related SLOs and an overall breadth of knowledge that is to be evaluated for this program SLO. For **SLO C.2**., assessment of writing skills, oral presentations, and familiarity with the scientific method will be made based on assignments in Biol. 204.

ii. Assessment of **SLOs A.1.-C.2.** will be via **direct measurements**;

iii. For each SLO, we will set **an initial target of 60%** of students demonstrating an acceptable or better performance as judged by exam scores or rubrics that evaluate more qualitative criteria. Rubrics will be generated by the faculty once this plan is adopted and will then posted on the Biology website as they become available.

B. Who: State explicitly whether the program's assessment will include evidence from all students in the program or a sample. Address the validity of any proposed sample of students.

SLO A.1., B.1. and C.1 will be assessed based on test questions given to all students taking the four Biology core courses (i.e. formally declared majors, "pre-majors" who will eventually become Biology majors, and non-majors), because early in the core sequence, it can be difficult to differentiate unambiguously those three populations of students. By contrast, assessments of **SLO C.2.** will include data for only declared Biology majors in Biol. 204. Given the large number of Biology majors (>1200), assessments of conceptual, writing, and oratory skills (i.e. **SLO C.2**) will be evaluated only once every three years.

3. When will learning outcomes be assessed? When and in what forum will the results of the assessment be discussed?

[Briefly describe the timeframe over which your unit will conduct the assessment of learning outcomes selected for the three-year plan. For example, provide a layout of the semesters or years (e.g., 2008-2009, 2009-20010, and 2010-2011), list which outcomes will be assessed, and which semester/year the results will be discussed and used to improve student learning (e.g., discussed with program faculty, interdepartmental faculty, advisory boards, students, etc.)]

SLO to be assessed	2014-2105	2015-2016	2016-2017
A.1. Students will demonstrate an understanding of key principles in various biological sub-	Exam questions will be selected by the faculty and administered in Biol. 201 the Fall; data will be compiled by	Exam questions will be selected by the faculty and administered in Biol. 202, 203 the Fall; data will be compiled by	Exam questions will be selected by the faculty and administered in Biol. 204 the Fall; data will be compiled by

disciplines that span molecular to ecosystem levels of organization	teaching assistants by the end of the semester; results will be graphed along with data for other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester	teaching assistants by the end of the semester; results will be graphed along with data for other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester	teaching assistants by the end of the semester; results will be graphed along with data for other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester
B.1. Students will able to design, test, and evaluate scientific hypotheses	Exam questions will be selected to assess this SLO in Biol. 201 during the Fall; data will be compiled by teaching assistants by the end of the semester; results will be graphed along with data for other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester	Assignments to assess this SLO will be made in Biol. 202, 203 during the Fall; data will be compiled by teaching assistants by the end of the semester; results will be graphed along with data for other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester	Assignments to assess this SLO will be made in Biol. 204 during the Fall; data will be compiled by teaching assistants by the end of the semester; results will be graphed along with data for other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester
C.1. Students will be able to summarize and interpret key findings of research papers		Assignments to assess this SLO will be made in Biol. 202,203 during the Fall; data will be compiled by teaching assistants by the end of the semester; results will be graphed along with data for	Assignments to assess this SLO will be made in Biol. 204 during the Fall; data will be compiled by teaching assistants by the end of the semester; results will be graphed along with data for

		other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester	other SLO assessments by the end of the Spring semester and discussed as a whole at a faculty meeting the following Fall semester
C.2. Students will demonstrate a capacity for analyzing biological data and for producing coherent written and oral presentations (not whole class – select random ~10 of final papers or assignment in one of the labs –maybe Cara Lea helps with this – collecting these data)			Assignments to assess this SLO will be made in Biol. 204 during the Spring; data will be compiled and graphed by teaching assistants by the end of the semester; results for this and other SLO assessments will discussed as a whole at a faculty meeting the following Fall semester

4. **What is the unit's process to analyze/interpret assessment data and use results to improve student learning?**

Briefly describe:

1. *who will participate in the assessment process (the gathering of evidence, the analysis/interpretation, recommendations).*

The gathering of evidence will be conducted as described in the table above. Final analysis and interpretation of the data will be carried out by the departmental Undergraduate Policy Committee, who will also present the data to the faculty at an annual SLO assessment meeting to be held each Fall.

2. *the process for consideration of the implications of assessment for change:*
   a. to assessment mechanisms themselves,
   b. to curriculum design,
   c. to pedagogy
   …in the interest of improving student learning.

Recommendations for change made by the Undergraduate Policy Committee will be considered by the entire Biology faculty, with significant input coming from the faculty involved in teaching the Biology core. Ramifications for curriculum design

and changes to be implemented in pedagogy will also be considered by the entire Biology faculty in the general interest of improving student learning.

3. How, when ,and to whom will recommendations be communicated?

Following discussion at the annual Assessment meeting of the faculty each Fall, and drawing upon continued electronic input via the Biology listserve, the Undergraduate Policy Committee will draft its summary recommendations that will be transmitted to the Chair, who can communicate these further to the Dean and/or the Associate Dean for Curriculum.