

University of Louisiana at Lafayette

Detailed Assessment Report

2015-2016 Biology BS

As of: 11/02/2016 01:55 PM CENTRAL

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Mission / Purpose

The Department of Biology aims to further scientific knowledge through extensive research and teaching. Its undergraduate program is intended to provide a comprehensive background in the major disciplines in Biology. Nevertheless, curricula are structured with concentrations in Biology, Microbiology or Resource Biology and Biodiversity, with training leading to careers in postgraduate study in the biological sciences as well as professional programs including medicine, dentistry, optometry, physical therapy and physician assistant. Graduates of the undergraduate program earn a Bachelor's of Science degree. The graduate program endeavors to train future scientists and scholars in Environmental and Evolutionary Biology through extensive hands-on research opportunities coupled with intensive classroom instruction. Graduate opportunities include the Masters of Science and Doctor of Philosophy degrees.

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Scientific Method

Biology majors will be able to apply the scientific method by making observations and performing experiments.

Connected Documents

[Running summary of the SLO for the Biology, B.S. degree](#)
[Scientific Method Results Fall 2012](#)

Related Measures

M 1: Laboratory Report Evaluation

In the fall of 2012 we will use the scientific method rubric to evaluate the 15 posters that are printed for the poster contest from the Biol 112 lab reports. The posters will be judged by 3 of the biology faculty members.

Students enrolled in Biol 112 (freshmen biology labs) conduct experiments using the scientific method and write lab reports which are evaluated by the lab coordinator, lab teacher and secondary science education majors enrolled in Biol 410 using a rubric. The reports are randomly selected.

Biology 112 (freshman laboratory)
Evaluation of the scientific method

Evaluation objectives 1 - 3 will be assessed for each student by their teaching assistant.

1. Conduct a small group activity during the second lab period of each course that introduces and explains the scientific method.

____ Participation in group activity (10 points)

____ Student correctly completes each goal within the exercise (5 points)

____ Student completes and returns homework assigned from the exercise (15 points)

Apply the scientific method

____ Student can identify the null and alternative hypothesis in all experimental laboratories performed during the semester (10 points)

____ The student has an overall average of 70% or more on all of the quizzes and exams that cover experimental laboratory exercises (10 points)

Master the implementation and presentation of the scientific method

____ Student wrote 3 lab reports covering experimental laboratory exercises and had an average grade of 70% or more (20 points)

____ Student correctly identified independent and dependent variables as well as control variables in at least one lab report (10 points)

____ Student obtained observed material from primary literature and properly cited this material in a reference section of at least one lab report (10 points)

Evaluation objective 4 will be assessed randomly by the laboratory coordinator.

Student took biology 112 and received a score on the first 3 evaluation objectives (above) of 65 or better.

Evaluation objective 5 will be assessed randomly by education majors who are taking biology 410 and the laboratory coordinator.

Student can provide an oral or written explanation of the scientific method when asked.

____ Student states each step in the scientific method (10 points)

____ Student can identify variables in an experimental design (10 points)

Source of Evidence: Project, either individual or group

Connected Documents

[Running summary of the SLO for the Biology, B.S. degree Scientific Method Results Fall 2012](#)

Target:

70% of the students are expected to score 70% or better overall on the rubric-based evaluation.

Connected Document

[Running summary of the SLO for the Biology, B.S. degree](#)

Finding (2015-2016) - Target: Not Reported This Cycle

This objective was not assessed this cycle.

Related Action Plans (by Established cycle, then alpha):

New Evaluation of BIOL 112 Presentations

In the following fall semesters, an additional survey will be performed on posters presented by the freshman biology students to the faculty and graduate students.

This survey will further evaluate the students' knowledge of the scientific method, and will be developed by the FLC during the summer of 2010. Each section of BIOL 112 will print the best poster from the 6 groups in the class, and they will compete against other freshman biology students for awards sponsored by local companies. The judges will comprise of 3 faculty members from the biology department. They will score the posters (out of 100) based on completion, results, analysis, and overall appearance. The average score will be calculated by the FLC.

Established in Cycle: 2009-2010

Implementation Status: Finished

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Laboratory Report Evaluation | **Outcome/Objective:** Scientific Method

Connected Document

[Running summary of the SLO for the Biology, B.S. degree](#)

Scientific Method Statistics Questions Missed and First/Second Semesters

In the Fall semesters of 2010, 2011, and 2013 we evaluated freshman biology students on their knowledge of the scientific method. This was done by giving the students surveys in the labs following the teaching of the scientific method. In all three semesters, the students scored higher than 70%. No statistics were performed to determine which questions on the surveys the students missed. In the upcoming Fall semesters, we plan to perform additional statistics to determine which questions the students are missing. With this knowledge, we can focus on these details during the teaching of the scientific method in the labs prior to the surveys. Additionally, in the past semesters, we have grouped both the first semester and second semester scores together. In the upcoming semesters, we will look at the difference in scores between the first and second semesters as well as the differences in the questions missed between the two semesters. Hopefully this knowledge will help us as teachers to emphasize and elaborate on the more difficult aspects of the scientific method.

Established in Cycle: 2013-2014

Implementation Status: Finished

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Laboratory Report Evaluation | **Outcome/Objective:** Scientific Method

Scientific Method

At this time we are not going to assess this objective.

Established in Cycle: 2014-2015

Implementation Status: On-Hold

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Laboratory Report Evaluation | **Outcome/Objective:** Scientific Method

SLO 2: Scientific Instrumentation

Biology majors will demonstrate familiarity with select scientific instrumentation.

This objective will be implemented in the fall of 2010.

Connected Documents

[Explanation of Biology Tracks for Assessment](#)

[First data analysis of Pre and Post Instrumentation and Micro and Resource Knowledge](#)

[Running summary of the SLO for the Biology, B.S. degree](#)

Related Measures

M 2: Pre and Post Test of Instrumentation Knowledge

The same instrumentation test that was given to the Sci 101 students will be given in the two sections of Biol 452 (senior seminar). The results will be compared to the those from the sci 101 students. Many of these students took the tests as freshmen. We will continue to revise the test. The committee will submit questions for review. Once we get the new test compiled we will administer it to the Biol 110 courses. (see copy of exam and key in document repository).

Source of Evidence: Standardized test of subject matter knowledge

Connected Documents

[Explanation of Biology Tracks for Assessment](#)

[First data analysis of Pre and Post Instrumentation and Micro and Resource Knowledge](#)

[Instrumentation test results pre/post test 2012-2014](#)

[Original Instrumentation Test](#)

[Running summary of the SLO for the Biology, B.S. degree](#)

Target:

It is expected that results will improve by 30% from the pre- to the post-test, and that on the post-test, 80% of students will have an average score of 80% or higher.

Connected Documents

[Instrumentation test results pre/post test 2012-2014](#)

[Original Instrumentation Test](#)

[Running summary of the SLO for the Biology, B.S. degree](#)

Finding (2015-2016) - Target: Not Reported This Cycle

This objective was not assessed this cycle.

Related Action Plans (by Established cycle, then alpha):

Develop and Implement Instrumentation Pre- and Post Test

Instrumentation Pre- and Post test will be developed over Summer 2010 and implemented in Fall 2010.

Established in Cycle: 2009-2010

Implementation Status: Terminated

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Pre and Post Test of Instrumentation Knowledge |

Outcome/Objective: Scientific Instrumentation

Connected Documents

[First data analysis of Pre and Post Instrumentation and Micro and Resource Knowledge](#)

[Running summary of the SLO for the Biology, B.S. degree](#)

Instrumentation - Pre/Post Tests

We will re-evaluate our pre and post instrumentation tests. We no longer have the sci 101 course and instead have a UNIV 100 course that contains students of all majors from the college of sciences so we will have to decide when and in what course we can give the pre-tests.

Established in Cycle: 2011-2012

Implementation Status: Terminated

Priority: High

Relationships (Measure | Outcome/Objective):**Measure:** Pre and Post Test of Instrumentation Knowledge |**Outcome/Objective:** Scientific Instrumentation**Connected Documents**[First data analysis of Pre and Post Instrumentation and Micro and Resource Knowledge](#)[Original Instrumentation Test](#)[Running summary of the SLO for the Biology, B.S. degree](#)**New test to determine general knowledge of biology.**

The Instructional Committee has decided to replace the instrumentation test with one that provides a broader assessment of student knowledge. As a result we decided stop giving the instrumentation test and will develop a new test using input from the biology faculty and their individual course's learning objectives.

Established in Cycle: 2013-2014**Implementation Status:** Finished**Priority:** High**Relationships (Measure | Outcome/Objective):****Measure:** Pre and Post Test of Instrumentation Knowledge |**Outcome/Objective:** Scientific Instrumentation**Connected Document**[Instrumentation test results pre/post test 2012-2014](#)**SLO 3: Biological Literature**

Biology majors will be able to access biological literature, evaluate, assimilate, and critique it. Students will be able to formally present this information to their peers.

Connected Document[Running summary of the SLO for the Biology, B.S. degree](#)**Related Measures****M 3: Senior Seminar Presentation Evaluation - BIOL 452**

The instructors will evaluate student presentations and participation using an evaluation rubric. The rubric will be devised by a committee consisting of three to four faculty members. Each student selects a scientific journal article of their choice which was then approved by the instructor. The student then developed a power-point presentation on this article and presented it to their peers. The instructor evaluated this presentation on choice of topic (20 points), organization (20 points), execution (25 points), and discussion (10 points).

Two biology faculty members not directly associated with the course will randomly select three students per section to evaluate their papers using the evaluation rubric.

Number of students assessed = All

Biology 452 Senior Seminar

Seminar Evaluation

Student: _____

1. Topic Choice (Timely, of general interest etc.) (20 points) _____

Comments:

2. Organization (Was the seminar presented in a logical and easy to follow thread?)

(20 points) _____

Comments:

3. Execution and PowerPoint quality (imagination, uniqueness etc.)

(25 points) _____

Comments:

4. Questions: (Did the seminar evoke questions from the class?)

(10 points) _____

Comments:

Total: _____

Source of Evidence: Presentation, either individual or group

Connected Document

[Running summary of the SLO for the Biology, B.S. degree](#)

Target:

This objective was not assessed this cycle.

Finding (2015-2016) - Target: Not Reported This Cycle

This objective was not assessed this cycle.

Related Action Plans (by Established cycle, then alpha):

Scientific Literature Rubric Development

All teachers of seminar classes with input from the assessment team will reevaluate the rubric used by the instructors to further develop each of the subdivisions within the rubric. It is hoped that future seminar students will understand more clearly their teacher's expectations. This refined rubric will be used for the first time during the fall 2010 semester. Outside evaluators will increase the number of randomly selected students for evaluation from six to ten which is an increase to 25% of all of the students enrolled. Funds will also be sought to purchase a video recording system so that in the future student presentations can be recorded. Outside evaluators will be able to view these recordings at their leisure and be better able to evaluate student and class interaction. It will also serve as amore efficient method of storing this information for future reference.

Established in Cycle: 2009-2010

Implementation Status: Finished

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Senior Seminar Presentation Evaluation - BIOL 452 |

Outcome/Objective: Biological Literature

Connected Document

[Running summary of the SLO for the Biology, B.S. degree](#)

SLO 4: Pre.Post Test Biology

"Biology majors will demonstrate proficient knowledge and understanding of the principles of modern Biology, including Biological Diversity, Genetics and Evolution, Cell and Molecular Biology, Anatomy, Physiology, Behavior and Developmental Biology, as well as Systematics and Ecology."

>

Relevant Associations:

Standard Associations

SACS (sections): 2010

1 educational programs, to include student learning outcomes

2.7.4 Course work for Degrees

3.5.3 Undergraduate program requirements

Related Measures

M 4: Pre/Post Biology Test

A general biology test was developed by the faculty of the biology department. This exam was given to the Biol 112 lab classes (freshmen) and to the Biol 452 (senior seminar) classes in the fall of 2014. A copy of the test is in the document depository.

Source of Evidence: Faculty pre-test / post-test of knowledge mastery

Connected Document

[Pre/Post Biology Exam - Fall 2015](#)

Target:

The seniors will be able to pass the test with at least 70% accuracy.

Connected Document

[Fall 2015 Pre/Post Biology Test Results](#)

Finding (2015-2016) - Target: **Not Met**

The new biology knowledge test was given to the freshmen biology lab (Biol 112) and the senior seminar sections in the fall of 2015. In the pre-test (freshmen) there were 40 biology majors, 311 students that didn't put a major and 22 students that were a major other than biology for a total of 733 students tested. There were 27 students tested in the post test (senior seminar). The average for the pre-test was 47% and for the post test 63%. There is a document posted in the documents section with the actual numbers and the statistics.

Related Action Plans (by Established cycle, then alpha):

Analysis of test questions

We will analyze the exams given in the fall of 2014 to see which questions were missed the most. The committee will evaluate the exam and make needed adjustments. The pre/post biology exam will be given again in the fall of 2015 to the Biol 112 labs and the Biol 452 (senior seminar) classes.

Established in Cycle: 2014-2015

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Pre/Post Biology Test | **Outcome/Objective:** Pre.Post Test Biology

Pre/Post - Biological Knowledge

The test that was reviewed by the committee and several of the questions were redone. The new test will be given to the freshmen biology lab (Biol 112) and the senior seminar class (Biol 452) in the fall of 2015. We are going to use the Tescan machine to grade the responses. A copy of the exam is in the documents depository.

Established in Cycle: 2014-2015

Implementation Status: In-Progress

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Pre/Post Biology Test | **Outcome/Objective:** Pre.Post Test Biology

Connected Document

[Pre/Post Biology Exam - Fall 2015](#)

Pre/Post Test - Biology Information

We will give the pre/post test for biology again to the freshmen labs and to the senior seminar sections. We will format the test so that we can be sure to get their major and find out if they have ever taken the test before. We will exclude those who have taken the exam before in the freshmen labs. We are going to work on getting their scores automatically loaded into excel. Last year there was a problem with two pages accidentally being left out of the post test so we will make sure that doesn't happen again this year. We will also meet and look at the questions again and see which questions the students are missing and see where they need to be getting that information in our curriculum. The post test average was 63% which is not the 70% benchmark that we want. There is however a significant difference between the freshmen (47%) and the seniors so we do know that our students are learning and improving!

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Pre/Post Biology Test | **Outcome/Objective:** Pre.Post Test Biology

Analysis Questions and Analysis Answers

How were assessment results shared and evaluated within the unit?

The assessment results were shared with the assessment committee and the department head via email.

Identify which action plans [created in prior cycle(s)] were implemented in this current cycle. For each of these implemented plans, were there any measurable or perceivable effects? How, if at all, did the findings appear to be affected by the implemented action plan?

The new exam was given however the exam given to the seniors was missing half of the questions. This error in copying the exam was not realized until after the exams were turned in to be graded. A new person is in charge of copying the exam and we are going to try a different scantron so it is easier to get the results to compare the various questions.

What has the unit learned from the current assessment cycle? What is working well, and what is working less well in achieving desired outcomes?

We learned that we need to double check the exams when they are copied to make sure all the pages are copied. We also figured out that we needed a different type of scantron to get the information we want so that it doesn't all have to be done by hand.

