

Academic Program Assessment Report

Assessment is a term commonly used to encompass the process of gathering and using evidence to guide improvements.

SACSCOC requires that an institution "identifies expected outcomes, assesses the extent to which it achieves these outcomes, and provides evidence of seeking improvement based on analysis of the results".

Academic Program

Biology

Submission Year

2018-2019

Assessment Coordinator Name

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Program Goal

Goal

Goal 1

Program Goal

Students will be able to apply appropriate quantitative reasoning, models, and simulations to classic and novel problems in biology.

Pillar of Success Supported

High-Demand, Market-Driven Programs

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Every Academic Program should have at least one Operational Outcome (Program Productivity) and two Student Learning Outcomes.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of selected questions requiring quantitative reasoning on the Major Field Test (MFT) in biology on which the percent of Lander students answering correctly was as high or higher than the national average percent of students answering correctly

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

The percent of Lander students answering the questions correctly was as high or higher than the national average on 60% or more of the questions

Performance Target for "Partially Met"

The percent of Lander students answering the questions correctly was as high or higher than the national average on at least 50% but fewer than 60% of the questions

Performance Target for "Not Met"

The percent of Lander students answering the questions correctly was as high or higher than the national average on fewer than 50% of the questions

Assessment Measure Used

Major Field Test (MFT) in biology (questions related to quantitative reasoning)

Frequency of Assessment

Every spring semester to students enrolled in 499

Data Collected for this Timeframe

54.5%

Score (Met=3, Partially Met=2, Not Met=1)

2

Comments/Narrative

The percent of Lander students answering questions requiring quantitative reasoning and/or modeling and simulation on the MFT was as high as or higher than the national average on 54.5% of the questions. Students partially met expectations for this outcome. These results are not surprising. Lander biology majors have historically struggled with quantitative reasoning and modeling/simulation, and for this topic was chosen as one of the program goals for assessment. Recent changes to the biology curriculum included the addition of more quantitative reasoning and modeling and simulation exercises in the first year courses (BIOL 111/112), the creation of a new required evolution course (BIOL 303) that focuses on these skills, and implementation of assessment for these skills in the Group 2 courses (BIOL 307, BIOL 403, and BIOL 422). The goal of these changes was to broadly increase exposure to more mathematical applications throughout the curriculum. Additionally, we put a plan in place to increase the number of activities and topics in which the students are exposed to and make use of models and simulations. Because the curriculum changes are so new, our current senior-level students (for whom data is reported here on the MFT) have not taken these revised courses.

Resources Needed to Meet/Sustain Results

An "Item Information Report" of the MFT from the ETS, which can be purchased for \$350 per year is required to sustain results.

Explanation of How Resources Will Be Used

The item information report will allow biology students at Lander to be compared to students nationally specifically for questions relating to quantitative reasoning and modeling and simulation. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to quantitative reasoning and modeling and simulation will be shared with the relevant instructors so that those faculty members can focus instruction on specific areas needing improvement

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

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Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Every Academic Program should have at least one Operational Outcome (Program Productivity) and two Student Learning Outcomes.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of students who score a 70% or higher on modeling and simulation assessments embedded within the Evolution (BIOL 303) course

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

At least 70% of students score 70% or higher on modeling and simulation assignments embedded in the Evolution (BIOL 303) course

Performance Target for "Partially Met"

At least 60% but fewer than 70% of students score 70% or higher on modeling and simulation assignments embedded within the Evolution (BIOL 303) course

Performance Target for "Not Met"

Fewer than 60% of students score 70% or higher on modeling and simulation assignments embedded within the Evolution (BIOL 303) course

Assessment Measure Used

Assignment in evolution (BIOL 303)

Frequency of Assessment

Every semester to students enrolled in BIOL 303

Data Collected for this Timeframe

83.1%

Score (Met=3, Partially Met=2, Not Met=1)

3

Comments/Narrative

83.1 percent of students scored 70% or higher on modeling and simulation assessments embedded within the Evolution (BIOL 303) course. Students met expectations for this outcome. The BIOL 303 course was designed as a sophomore course, and the assessments created for this outcome are appropriate for second year students. Nearly all of the BIOL 303 students assessed during the 2017-2018 cycle were seniors or juniors in the program. The ease with which students met expectations for this outcome was likely at least partially due to this fact. Additionally, these assignments were not completed in the context of an exam, and so students were able to use their textbook, talk with other students, and ask questions of the instructor. It was our prediction that students would score better on this type of assessment than they would on the MFT or on embedded exam questions, and so these 2017-2018 results are not unexpected.

Resources Needed to Meet/Sustain Results

\$900 would allow purchase of two classroom sets of calculators (TI-30XS Multiview scientific calculators). These are the same type of calculators students use in their MATH 121 course, and this would ensure continuity between classes and make it unnecessary for students to learn to use a different calculator for their major courses.

Explanation of How Resources Will Be Used

To sustain results on this indicator, access to appropriate calculators is necessary. Purchase of classroom sets would ensure access for all students and greatly increase instructor ability to aid students in using their calculator. Calculator sets could easily be shared between BIOL 111, 112, and 303 students.

Outcome 3

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Every Academic Program should have at least one Operational Outcome (Program Productivity) and two Student Learning Outcomes.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of students who score a 70% or higher on quantitative reasoning assessments embedded within the Genetics (BIOL 312) course

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

At least 70% of students score 70% or higher on quantitative reasoning assignments embedded within the Genetics (BIOL 312) course

Performance Target for "Partially Met"

At least 60% but fewer than 70% of students score 70% or higher on quantitative reasoning assignments embedded within the Genetics (BIOL 312) course

Performance Target for "Not Met"

Fewer than 60% of students score 70% or higher on quantitative reasoning assignments embedded within the Genetics (BIOL 303) course

Assessment Measure Used

Assignment in genetics (BIOL 312)

Frequency of Assessment

Every fall semester to students enrolled in BIOL 312

Data Collected for this Timeframe
82.7%

Score (Met=3, Partially Met=2, Not Met=1)
3

Comments/Narrative

82.7 percent of students scored 70% or higher on quantitative reasoning assessments embedded within the Genetics (BIOL 312) course. Students met expectations for this outcome. Similar to the BIOL 303 assessment, students were assessed based on an assignment (not an exam) for which they were able to use outside resources. Accordingly, the number of students that were successful on this assessment was quite high. It was our prediction that students would score better on this type of assessment than they would on the MFT or on embedded exam questions, and so these 2017-2018 results are not unexpected.

Resources Needed to Meet/Sustain Results

Approximately \$2000 would allow purchase of materials for the construction of a CO2 anesthetizing system for students to use in the genetics laboratory.

Explanation of How Resources Will Be Used

Students in the BIOL 312 course have particular difficulty with parts of the laboratory that are unrelated to their learning of the content, and one of these is easy anesthetization of their flies. In the course right now, this process is difficult and clearly gets in the way of learning by creating frustration and using large amounts of student time outside the classroom. Students get bogged down in the steps of the laboratory and lose sight of the larger experiments they are completing. This makes learning the quantitative aspects of genetics substantially more onerous than it actually should be. All biology majors would be positively affected by this purchase.

Outcome 4

Outcomes are specific, **measurable** statements that reflect the broader goals.

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Every Academic Program should have at least one Operational Outcome (Program Productivity) and two Student Learning Outcomes.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of students who score a 70% or higher on quantitative reasoning or modeling and simulation assessments embedded within the Group 2 (BIOL 307, BIOL 403, and BIOL 422) courses

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

At least 70% of students score 70% or higher on quantitative reasoning or modeling and simulation assignments embedded within the Group 2 courses

Performance Target for "Partially Met"

At least 60% but fewer than 70% of students score 70% or higher on quantitative reasoning or modeling and simulation assignments embedded within the Group 2 courses

Performance Target for "Not Met"

Fewer than 60% of students score 70% or higher on quantitative reasoning or modeling and simulation assignments embedded within the Group 2 courses

Assessment Measure Used

Assignments in Group 2 (BIOL 307, BIOL 403, and BIOL 422) courses

Frequency of Assessment

Every semester to students enrolled in Group 2 (BIOL 307, BIOL 403, and BIOL 422) courses

Data Collected for this Timeframe

54.4%

Score (Met=3, Partially Met=2, Not Met=1)

1

Comments/Narrative

54.4 percent of students scored 70% or higher on quantitative reasoning or modeling and simulation assessments embedded within the Group 2 (BIOL 307, BIOL 403, and BIOL 422) courses. Students failed to meet expectations for this outcome. For the courses assessed during the 2017-2018 academic year, these assessments were embedded exam questions. Student success was predictably lower on this outcome and very similar to the success of students on Outcome 1 for this program goal.

Resources Needed to Meet/Sustain Results**Explanation of How Resources Will Be Used**

Goal Summary

Goal Summary/Comments

For this program goal, students met expectations for two of the outcomes, partially met expectations for one of the outcomes, and failed to meet expectations for one of the outcomes. When devising the assessments for this outcome, we felt it was important to measure student progress using different instruments, and we feel that this explains the discrepancies between the results for the four outcomes. In situations where students could receive assistance or use outside sources on their assessment, scores were higher than in test situations. For a skillset as broad as quantitative reasoning and modeling and simulation, we think that these results provide a large amount of data that we will be able to use to design and implement future assessments. Moving students from success on assignments to success on class exams and standardized exams is obviously the larger goal, and we plan to track student progress in achieving this goal over the next few years as students are repeatedly exposed to these skills as part of the newly revised biology curriculum.

Changes Made/Proposed Related to Goal

Faculty teaching the courses assessed for this program goal are planning to make at least some of the following changes in their courses: increase the number of practice problems students are assigned, spend more class and discussion time learning to interpret data, and to increase the frequency at which students are exposed to these concepts. As students who started as freshmen in the new curriculum reach upper-class status, we hope to see improvements in attaining this program goal for each of the outcomes. We will continue to collect and analyze data for this program goal and propose changes to courses each year.

Upload Rubrics/Other Files

Goal 2

Program Goal

Students will be able to accurately and effectively communicate and collaborate within the discipline of biology and with other disciplines.

Pillar of Success Supported

High-Demand, Market-Driven Programs

Outcomes

Outcome 1

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Every Academic Program should have at least one Operational Outcome (Program Productivity) and two Student Learning Outcomes.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of biology seniors who scored a 2 (Proficient) or a 3 (Advanced) on the "Effective Scientific Communication" criterion of the Student Presentation Rubric

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

At least 70% of students scored a 2 or a 3 on the "Effective Scientific Communication" criterion of the presentation rubric

Performance Target for "Partially Met"

At least 60% but fewer than 70% of students scored a 2 or a 3 on the "Effective Scientific Communication" criterion of the presentation rubric

Performance Target for "Not Met"

Fewer than 60% of students scored a 2 or a 3 on the "Effective Scientific Communication" criterion of the Student Presentation Rubric

Assessment Measure Used

BIOL 499 Student Oral Presentation Rubric

Frequency of Assessment

Every spring semester to students enrolled in 499

Data Collected for this Timeframe

66.3%

Score (Met=3, Partially Met=2, Not Met=1)

2

Comments/Narrative

66.3% of students scored a 2 or a 3 on the “Effective Scientific Communication” criterion of the presentation rubric. Students partially met expectations in the 2017–2018 academic year. The Biology Department has made numerous changes to individual courses and the curriculum to make students more effective at communicating science. The biology seminar series (BIOL 299, 399, 499) develops oral and written communication skills by having students read, analyze, and present on articles from the primary literature. BIOL 299 culminates with students presenting a summary of a journal article as part of a group. BIOL 399 culminates with students independently presenting a summary of a journal article that they chose. BIOL 499 culminates with students independently presenting a synthesis of three journal articles that they chose. The written and oral summaries at each level of the seminar series focus on a student’s ability to identify the major research questions in the journal article and to describe and explain the experimental design and results of the article. The students evaluated in BIOL 499 during the 2017–2018 academic year are the first students to have completed the seminar sequence. The introductory courses for biology majors (BIOL 111 and BIOL 112) have also undergone significant revisions with the goal of increasing a student’s ability to effectively communicate science. The lecture and lab portions of the course now include numerous small-scale writing assignments. Students keep written research records for their labs and have short writing assignments and exam responses in lecture. It will still be several years before the students who have been through the revised BIOL 111 and 112 will be giving presentations in BIOL 499.

Resources Needed to Meet/Sustain Results

The resources required to sustain and improve results are books on communication in science for students at a cost of \$20 each for CSE guidelines and \$75 each for copies of the standard writer’s guide for science writing. For the number of biology students that are typically in BIOL 299, this would amount to approximately \$500

Explanation of How Resources Will Be Used

Books on scientific communication will give students an extra resource for improving their skills and could be used throughout the seminar series.

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

Every Academic Program should have at least one Operational Outcome (Program Productivity) and two Student Learning Outcomes.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of biology seniors who scored a 2 (Proficient) or a 3 (Advanced) on the “Appropriate Scientific Communication (Vocabulary)” and “Appropriate Scientific Communication (Style/Delivery)” criteria of the Student Presentation Rubric

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

At least 70% of students scored a 2 or a 3 on the "Appropriate Scientific Communication (Vocabulary)" and "Appropriate Scientific Communication (Style/Delivery)" criteria of the Student Presentation Rubric

Performance Target for "Partially Met"

At least 60% but fewer than 70% of students scored a 2 or a 3 on the "Appropriate Scientific Communication (Vocabulary)" and "Appropriate Scientific Communication (Style/Delivery)" criteria of the Student Presentation Rubric

Performance Target for "Not Met"

Fewer than 60% of students scored a 2 or a 3 on the "Appropriate Scientific Communication (Vocabulary)" and "Appropriate Scientific Communication (Style/Delivery)" criteria of the Student Presentation Rubric

Assessment Measure Used

BIOL 499 Student Oral Presentation Rubric

Frequency of Assessment

Every spring semester to students enrolled in 499

Data Collected for this Timeframe

62.5%

Score (Met=3, Partially Met=2, Not Met=1)

2

Comments/Narrative

62.5% of students scored a 2 or a 3 on the "Appropriate Scientific Communication" criterion of the presentation rubric. Students partially met expectations in the 2017–2018 academic year. The Biology Department has made changes to the curriculum that aim to improve the oral communication skills of our students. The expanded biology seminar series (BIOL 299, 399) was developed in response to the difficulties in effective oral communication that biology majors were experiencing in BIOL 499. Students moving through the seminar series are guaranteed to give several oral presentations each year. The 2017–2018 academic year is the first year where the students in BIOL 499 have completed the entire seminar series.

Resources Needed to Meet/Sustain Results

The resources required to sustain and improve results are books on communication in science for students at a cost of \$20 each for CSE guidelines and \$75 each for copies of the standard writer's guide for science writing. For the number of biology students that are typically in BIOL 299, this would amount to approximately \$500.

Explanation of How Resources Will Be Used

Books on scientific communication will give students an extra resource for improving their skills and could be used throughout the seminar series.

Outcome 3

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention,

employment data).

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What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome

Percent of students who scored a 70% or higher on writing assignments embedded in Group 1 (BIOL 308, BIOL 313, and BIOL 401) courses

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

At least 70% of students scored 70% or higher on writing assignments embedded in Group 1 courses

Performance Target for "Partially Met"

At least 60% but fewer than 70% of students scored 70% or higher on writing assignments embedded in Group 1 courses

Performance Target for "Not Met"

Fewer than 60% of students scored 70% or higher on writing assignments embedded in Group 1 courses

Assessment Measure Used

Writing assignment rubrics from Group 1 (BIOL 308, BIOL 313, and BIOL 401) courses

Frequency of Assessment

Every semester to students enrolled in Group 1 (BIOL 308, BIOL 313, and BIOL 401) courses

Data Collected for this Timeframe

72.0%

Score (Met=3, Partially Met=2, Not Met=1)

3

Comments/Narrative

72% of students scored a 70% or higher on writing assignments in the Group 1 course (BIOL 308, 313, 401). Students met expectations for this outcome. Students were assessed by writing assignments in the Group 1 courses (BIOL 308, 313, 401). Under the new biology curriculum, majors are required to complete at least one of these courses. The expanded biology seminar series (BIOL 299, 399) requires students to write summaries of peer-reviewed journal articles. These summaries are expected to be clearly written and accurately reflect the paper read by the students. The new introductory biology sequence (BIOL 111 and 112) have been modified to include a larger number of writing assignments. The increase in assignments (through lecture and lab) and meaningful feedback give students more opportunities to develop writing skills. The assessment of written communication met expectations where the assessments of oral communication were only partially met. In some Group 1 courses, students were allowed to revise their writing assignments before they were graded for the final assessment. This increases the percentage of students that meet expectations. Allowing revisions is also a reflection of the writing process in science, which is often collaborative and involves reviewer that give recommendations for revisions to your writing.

Resources Needed to Meet/Sustain Results

The resources required to sustain and improve results are books on communication in science for students at a cost of \$20 each for CSE guidelines and \$75 each for copies of the standard writer's guide for science writing. For the number of biology students that are typically in BIOL 299, this would

amount to approximately \$500.

Explanation of How Resources Will Be Used

Books on scientific communication will give students an extra resource for improving their skills and could be used throughout the seminar series.

Goal Summary

Goal Summary/Comments

Students have historically struggled with their ability to communicate in the appropriate scientific manner and so the seminar series was developed to provide a useful scaffolding of these skills into the biology curriculum. Compared to previous years (outside of this assessment cycle), faculty teaching the courses in the seminar series are starting to see improved scientific communication skills in students. Because communicating scientifically is very different than writing for literature or English language classes, it will always be somewhat difficult to meet expectations for these outcomes. Students have virtually no experience with this skill set prior to beginning their science coursework, and these same students have developed some serious misconceptions about the process of science in their high school years that often cause difficulties in the college classroom. Data will continue to be collected for these outcomes, and faculty will look for additional opportunities to address these topics outside of the seminar series.

Changes Made/Proposed Related to Goal

The seminar series was designed and developed to increase student proficiency in communicating science in both appropriate and effective ways. One major change that faculty will be working on during this academic year is writing core rubrics for a number of these outcomes. The goal is to develop a series of basic rubrics that faculty can use as a starting point when designing assessments involving primary literature, the process of science, and scientific communication (in both written and oral forms).

Upload Rubrics/Other Files

Goal 3

Program Goal

To comply with Program Productivity standards as defined by the South Carolina Commission on Higher Education

Pillar of Success Supported

High-Demand, Market-Driven Programs

Outcomes

Outcome 1

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What type of Outcome would you like to add?

Operational Outcome

Enter Outcome

Outcome 1: Major enrollment

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

Using a five-year rolling average, the number of students enrolled in the major (a) for Baccalaureate programs is greater than or equal to 12.5, (b) for Master's/First Professional is greater than or equal to 6.

Performance Target for "Partially Met"

Not applicable

Performance Target for "Not Met"

Using a five-year rolling average, the number of students enrolled in the major (a) for Baccalaureate programs is less than 12.5, (b) for Master's/First Professional is less than 6.

Assessment Measure Used

South Carolina Commission on Higher Education Management Information System (CHEMIS), the Commission's Academic Degree Program Inventory, Lander University Fact Book

Frequency of Assessment

Annually

Data Collected for this Timeframe

170.6

Score (Met=3, Partially Met=2, Not Met=1)

3

Comments/Narrative

This outcome was met. There have historically been a large number of biology majors in this program (particularly during the first year). Enrollment drops off considerably after the first year, however. Many changes have recently been made to increase the number of students attending Lander at the university level, and as a result the number of students in the biology program has continued to be high. In order to increase enrollment in the biology major, the department would need additional tenure-track and non-tenure track faculty to teach the introductory courses.

Resources Needed to Meet/Sustain Results

To maintain our current enrollment, two non-tenure track laboratory instructor positions would need to be created. To increase enrollment, an additional lecturer or tenure-track faculty member would be required to teach additional sections of the first year courses for our majors.

Explanation of How Resources Will Be Used

Currently, some of the laboratories are taught by adjunct faculty, and this is far less than an ideal situation. With the recent changes to the program, it has become increasingly important that faculty teaching the introductory laboratories have not only an excellent background in biology but a long-term interest in our students. The only way to assure this is by hiring full time faculty to teach these courses. The newly developed BIOL 111 and 112 courses are showing increased retention of students, but without additional faculty, we have no way to add additional sections of courses to meet this potential demand.

Outcome 2

Outcomes are specific, **measurable** statements that reflect the broader goals.

Academic Programs are required to develop **Student Learning Outcomes**, which describe knowledge, skills, and values that students are expected to gain as a result of their educational experiences.

Academic Programs may also develop **Operational Outcomes**, which describe the level of performance of an operational aspect of a program or office (ex. graduation rates, retention, employment data).

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What type of Outcome would you like to add?

Operational Outcome

Enter Outcome

Outcome 2: Completions (Degrees awarded)

Timeframe for this Outcome

Academic Year 2017-2018

Performance Target for "Met"

Using a five-year rolling average, the number of degrees awarded (a) for Baccalaureate programs is greater than or equal to 8, (b) for Master's/First Professional is greater than or equal to 3.

Performance Target for "Partially Met"

Not applicable

Performance Target for "Not Met"

Using a five-year rolling average, the number of degrees awarded (a) for Baccalaureate programs is less than 8 (b) for Master's/First Professional is less than 3.

Assessment Measure Used

South Carolina Commission on Higher Education Management Information System (CHEMIS), the Commission's Academic Degree Program Inventory, Lander University Fact Book

Frequency of Assessment

Annually

Data Collected for this Timeframe

15.4

Score (Met=3, Partially Met=2, Not Met=1)

3

Comments/Narrative

This outcome was met. While there have historically been many students in the biology major at any given time, the number of graduating seniors has fluctuated somewhat. With recent changes to the program and general education requirements, a high degree of flexibility has been added to the 4-year guides for our majors. Students will have the opportunity to choose courses to fit their specific needs, and we think this will increase retention and graduation of students in the biology major.

Resources Needed to Meet/Sustain Results

To maintain our current enrollment, two non-tenure track laboratory instructor positions would need to

be created. To increase enrollment, an additional lecturer or tenure-track faculty member would be required to teach additional sections of the first year courses for our majors.

Explanation of How Resources Will Be Used

Currently, some of the laboratories are taught by adjunct faculty, and this is far less than an ideal situation. With the recent changes to the program, it has become increasingly important that faculty teaching the introductory laboratories have not only an excellent background in biology but a long-term interest in our students. The only way to assure this is by hiring full time faculty to teach these courses. The newly developed BIOL 111 and 112 courses are showing increased retention of students, but without additional faculty, we have no way to add additional sections of courses to meet this potential demand.

Goal Summary

Goal Summary/Comments

Overall, the biology program easily met both outcomes for the program goal. Within the department, we have recently changed our curriculum to add flexibility for students with varied career plans, and we are confident that this will not only increase retention of students but also increase graduation rates.

Changes Made/Proposed Related to Goal

A number of changes have recently been made to try to increase student engagement both in the classroom and outside the classroom in the Department of Biology. Three years ago, we started an annual "Biology Bash" during the early part of the fall semester so that new students could meet and interact with returning students and faculty. Members in the biology honor society, TriBeta, are currently working on plans to include more students in their events and activities. Faculty teaching the first year biology courses and the biology LINK 101 instructors are planning additional activities for our younger students. It is our hope that getting students engaged with each other outside the classroom will help to forge bonds between students and increase the sense of community and belonging to the major. Additionally, within the seminar series, faculty are working to include more information for students about job opportunities after they finish their degree. Because so many students start out as "pre-med" majors and find that they change their mind (for many different reasons), we are trying to give these students options with the hope that they will remain in the program and work in the biological sciences after graduation.

Upload Rubrics/Other Files