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".

Be sure to SAVE your progress as you work!

Academic Program
Biology, B.S.

Submission Due Date
2024-2025

Assessment Coordinator Name
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Program Goal

Goal

Goal 1

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Students will demonstrate an understanding of evolution, structure and function relationships, information flow and exchange, pathways and transformations of energy and matter, and the interconnectedness within and among living systems.

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?

Student Learning Outcome

Enter Outcome
Percent of selected questions about evolution 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 percent of students answering correctly.

Timeframe for this Outcome
Academic Year 2023-2024

Performance Target for "Met"
The percent of Lander students answering the question correctly was as high or higher than the percent of students answering the question correctly nationally on 60% 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 in Biology

Frequency of Assessment
Every fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
81%

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

Comments/Narrative
The percent of Lander students answering questions about evolution on the MFT was as high as or higher than the national average on 81% of the questions. Students met expectations for this outcome (> 60%). As is true in every cohort of biology majors now, each student taking the MFT this year had completed an evolution course (either our BIOL 303 Evolution course or a course that transferred in as equivalent) during their degree program. Every student in this cohort (who completes their biology courses in our department) will have had the benefit of our revised introductory biology curriculum (now BIOL 111/112) and required diversity course (BIOL 213 or BIOL 214) which also cover topics in basic evolutionary biology. The students taking the MFT during this assessment cycle (2023-2024) and prior cycles (from 2020 through 2023) have had extensive coursework in evolution as evidenced by how well Lander biology students did compared to the national average.

Since 2017-2018, students have met expectations for this outcome in 5 of 7 years (71%) they were assessed and partially met it in the remaining 2 of 7 years (29%). We believe that the two years when the outcome was partially met (2021-22, 2022-2023) could reflect learning challenges that were faced by students during the COVID-19 pandemic. However, while the differences between cohorts may be meaningful, much of the variability is likely attributable to stochastic effects. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (70%), 2022-2023 (64%), and 2023-2024 (65%). In all cases, student met expectations. As a result, we are optimistic that with continued coverage of these topics throughout the courses in our major will lead to continued success on this outcome.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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 evolution. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to evolution will be shared with the relevant instructors so that those faculty members can focus instruction in specific areas needing improvement.

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of selected questions about structure and function relationships 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 2023-2024

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 in Biology

Frequency of Assessment
Every fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
53%

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

Comments/Narrative
The percent of Lander students correctly answering questions about the relationship between structure and function on the MFT was as high as or higher than the national average on 53% of the questions. Students partially met expectations in this category (50% - 60%). This is a dramatic improvement over the previous year, when the percent of Lander students answering correctly was as high or higher than the national average on only 21% of questions, but not as good as two years ago when the number was 68%. We will continue to monitor success and look for longer-term patterns.

Over the last 7 years, students have only met expectations for this outcome in 1 of 7 years (14%) of the years they were assessed, partially met it in 3 of 7 years (43%) in which they were assessed, and failed to meet it in the remaining 3 of 7 years (43%) in which they were assessed. With a relatively small number of students taking the MFT each year, it is difficult to determine whether these dramatic fluctuations represent real changes in student mastery of this important concept or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (51%), 2022-2023 (46%), and 2023-2024 (45%). Using this metric, the students partially met the outcome once and did not meet the outcome twice. These data indicate a persistent weakness in the biology students' understanding of the relationship between structure and function in biology. Currently, the biology curriculum is structured so that students are required to take one course emphasizing the relationship between structure and function, but that course can focus on plants, animals, or cells. Questions on the MFT span all areas, and unfortunately, the specific information students acquire in one course does not apply to other courses for this outcome. These results will be discussed with the faculty teaching relevant courses to find ways to better introduce and reinforce these concepts throughout our curriculum.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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 structure and function. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to structure and function will be shared with the relevant instructors so that those faculty members can focus instruction in specific areas needing improvement.

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of selected questions about information flow and exchange 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 2023-2024

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 in Biology

Frequency of Assessment
Every fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
59%

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

Comments/Narrative
The percent of Lander students correctly answering questions about information flow and exchange on the MFT was as high as or higher than the national average on 59% of the questions. Students partially met expectations in this category (50-60%). These results are in line with previous years for this outcome.

Over the last 7 years, students met expectations for this outcome in 3 of 7 years (43%) of the years they were assessed, partially met it in 2 of 7 years (29%) in which they were assessed, and failed to meet it in the remaining 2 of 7 years (29%) in which they were assessed. With a relatively small number of students taking the MFT each year, it is difficult to determine whether these dramatic fluctuations represent real changes in student mastery of this important concept or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (57%), 2022-2023 (57%), and 2023-2024 (55%). Using this metric, the students partially meet the outcome. It is clear that while student understanding of information flow and exchange in biological systems varies across cohorts, it generally falls short of fully meeting expectations.

All of the students taking the MFT in the past 7 years had completed a genetics course (either our BIOL 312 Genetics course or a course that transferred in as equivalent) during their degree program. Every student in since the 2020-2021 cohort (who completes their biology courses in our department) will have had also the benefit of our revised introductory biology curriculum (now BIOL 111/112), and at least one upper-level biology course emphasizing information flow and exchange. However, understanding information flow and exchange requires not only memorization of facts, but also the ability to synthesize material learned throughout the curriculum. As a result, these will likely continue to be difficult concepts for students. However, in the 2024-2025 academic year, we plan to offer an Advanced Genetics course, which will provide students with an opportunity to further explore these

topics. In addition, the current Genetics course will be revised to emphasize the core information flow and exchange concepts that students need to meet this outcome. We will continue to monitor student success after these changes have been implemented.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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 information flow and exchange. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to information flow and exchange will be shared with the relevant instructors so that those faculty members can focus instruction in specific areas needing improvement.

Outcome 4

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of selected questions about the pathways and transformations of energy and matter 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 2023-2024

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 **Frequency of Assessment**

Major Field Test in Biology	Every fall and spring semester to students enrolled in BIOL 499
Data Collected for this Timeframe (Results) 58%	**Score (Met=3, Partially Met=2, Not Met=1)** 2

Comments/Narrative
The percent of Lander students answering questions about the pathways and transformations of energy and matter on the MFT was as high as or higher than the national average on 58% of the questions. Students partially met expectations in this category (50% - 60%). This is a dramatic improvement over the previous year, when the percent of Lander students answering correctly was as high or higher than the national average on only 33% of questions, but not as good as two years ago when the number was 75%.

Over the last 7 years, students have met expectations for this outcome in 2 of 7 years (29%) they were assessed, partially met it in 2 of 7 years (29%) in which they were assessed, and failed to meet it in the remaining 3 of 7 years (43%) in which they were assessed. With a relatively small number of students taking the MFT each year, it is difficult to determine whether these dramatic fluctuations represent real changes in student mastery of this important concept or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (54%), 2022-2023 (47%), and 2023-2024 (47%). Using this metric, the students partially met the outcome once and did not meet the outcome twice. These data indicate a persistent weakness in the biology students' understanding of pathways and transformations of energy and matter in biology. We will continue to track student success and find specific ways to address these topics throughout the relevant courses in our curriculum. These results will be discussed with the faculty teaching relevant courses to find ways to better introduce and reinforce these concepts throughout our curriculum. Similarly to other outcomes for this goal, understanding the pathways and transformations of energy and matter requires not only memorization of facts, but also the ability to synthesize material learned throughout the curriculum, these will likely continue to be difficult concepts for students.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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 the pathways and transformations of energy and matter. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to pathways and transformations of energy and matter will be shared with the relevant instructors so that those faculty members can focus instruction in specific areas needing improvement.

Outcome 5

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of selected questions about interconnectedness within and among biological systems 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 2023-2024

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 in Biology

Frequency of Assessment
Every fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
71%

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

Comments/Narrative
The percent of Lander students answering questions about the interconnectedness of biological systems on the MFT was as high as or higher than the national average on 71% of the questions. Students met expectations (> 60%) in this category.

Over the last 7 years, students met expectations for this outcome in 4 of 7 years (57%) of the years they were assessed, partially met it in 2 of 7 years (29%) in which they were assessed, and failed to meet it in the remaining 1 of 7 years (14%) in which they were assessed. With a relatively small number of students taking the MFT each year, it is difficult to determine whether these dramatic fluctuations represent real changes in student mastery of this important concept or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (63%), 2022-2023 (60%), and 2023-2024 (59%). Using this metric, the students met the outcome twice and partially met the outcome once. Overall, biology students demonstrate an understanding of the interconnectedness of biological systems and we are optimistic that with continued coverage of these topics throughout the courses in our major students will continue to be successful on this outcome.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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 the interconnectedness of biological systems. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to information flow and exchange will be shared with the relevant instructors so that those faculty members can focus instruction in specific areas needing improvement.

Goal Summary

Goal Summary/Comments
This year, students did fairly well in meeting the expectations for Program Goal 1. Students met expectations for 2 of 5 of the outcomes, and partially met for 3 of 5 outcomes. This became a program goal for the first time during 2017-2018 when we completely updated the curriculum for the major to add increased flexibility for our students seeking employment in the biological sciences and entry into many different graduate programs. When we devised this goal, we knew it was a lofty one with an overall ambition of ensuring that students can meet expectations in understanding the five core concepts in biology: evolution, structure and function relationships, information flow and exchange, pathways and transformations of energy and matter, and the interconnectedness within and among living systems.

The results from this year's cohort are dramatically better than those from the 2022-2023 cohort (when students did not meet expectations for 3 of 5 categories and partially met expectations for 2 of 5 categories). It is difficult to know whether the improvement indicates that students are recovering from the effects of the COVID-19 pandemic, or simply reflects noisy data. While there have been more successful and less successful cohorts in terms of this goal, our 5-year rolling average graduation rate has risen, and we are pleased that students are experiencing success in completing their degree. The fact that there is no consistent negative trend in student success in this outcome, despite students finishing the degree who might have been "weeded out" in previous years, is encouraging. We will continue to monitor student success and work to find specific ways to increase success on these outcomes.

Changes Made/Proposed Related to Goal
Two years ago, members of the assessment committee decided to discontinue the collection of data in courses taught in the program and concentrate efforts on collecting and interpreting the results of the MFT for this goal in order to make comparisons across cohorts easier to interpret. Although last year's performance on the MFT was lower than any of the previous 5 years where MFT data was analyzed, the change in the assessment plan made it easy to see the dramatic improvement from this year's cohort for this outcome. For all outcomes, however, success continues to vary from year to year. With a relatively small number of students taking the MFT each year, it is difficult to determine whether these fluctuations represent real changes in student mastery of concepts or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average for each outcome. When the outcomes in this goal are considered using this metric, it is clear that students are largely successful for two outcomes (1 and 5), partially successful for another (3), and largely unsuccessful for two others (2 and 4). This information makes it easier for the department to focus on specific areas where student understanding is weakest. We propose to report data for each outcome as a 5-year rolling average going forward. We met as a department in December 2023 to discuss the previous results of the MFT and will continue to think carefully about ways that we can better address the most difficult concepts in multiple courses throughout our curriculum.

Upload Rubrics/Other Files

Goal 2

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

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).

Most goals have at least two outcomes measured.

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 2023-2024

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

Frequency of Assessment
Every fall and spring semester to students enrolled

related to quantitative reasoning)	in BIOL 499
Data Collected for this Timeframe (Results)	**Score (Met=3, Partially Met=2, Not Met=1)**
43%	1

Comments/Narrative
The percent of Lander students answering questions requiring quantitative reasoning on the MFT was as high as or higher than the national average on 43% of the questions. Students did not meet expectations for this outcome.

In the 7 years prior, students have met expectations for this outcome in 2 of 7 years (29%), partially met it in 2 of 7 years (29%), and failed to meet it in the remaining 3 of 7 years (43%). With a relatively small number of students taking the MFT each year, it is difficult to determine whether these dramatic fluctuations represent real changes in student mastery of this important concept or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (48%), 2022-2023 (49%), and 2023-2024 (44%). Using this metric, the students are not meeting expectations for this outcome. This indicates a persistent weakness in the ability of biology majors to use quantitative reasoning.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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. The biology department will use this data to determine which specific areas of the program need improvement. Additionally, results from questions related to the quantitative reasoning will be shared with the relevant instructors so that those faculty members can focus instruction in specific areas needing improvement.

Goal Summary

Goal Summary/Comments
For this program goal, students did not meet expectations for the assessed outcome.

Now that we have a number of years to compare, it is clear that students’ quantitative reasoning skills vary across cohorts, but that overall, students struggle with quantitative reasoning. We will continue to track student success and find specific ways to address these topics throughout the relevant courses in our curriculum.

One potential reason that students do sometimes struggle with this outcome is that often the questions on the MFT related to quantitative reasoning require that they also feel comfortable with the system in which the quantitative reasons skills are addressed. It is also possible that students are less likely to believe that they will be successful on quantitative questions. Throughout our program, we have a subset of majors that have extremely high quantitative literacy, but that is not the norm. Many of our students struggle with quantitative reasoning skills, and this is one of the reasons we feel that this is a particularly important skill to stress throughout our curriculum. The first course that biology majors complete is BIOL 111 and we have worked to include practice with quantitative skills in as many places as possible throughout the lecture and lab portions of the course. In their sophomore-level evolution course, they also encounter many quantitative projects and assignments. They have at least two specific quantitative exercises in each unit (in addition to the quantitative skills that are embedded throughout the course). At

least anecdotally, we think that once students realize that math, numbers, and related skills are a part of biology, they become more willing to practice these skills. A number of their upper-level group and elective courses are also heavily quantitative. We will continue to seek out every possible opportunity to include assignments and projects that relate to this goal throughout our curriculum because quantitative literacy is essential to students of science.

Changes Made/Proposed Related to Goal
Two years ago, members of the assessment committee decided to discontinue the collection of data in courses taught in the program and concentrate efforts on collecting and interpreting the results of the MFT for this goal to make comparisons across cohorts easier to interpret. This year's performance on the quantitative reasoning questions of the MFT was lower than the previous 2 years where MFT data was analyzed, but is well within the range (spanning from 14 to 71%) over the 6 previous years the data was collected. One way to minimize noise in the data is to report the 5-year rolling average for each outcome. We propose to report this revised metric going forward.

We met as a department in December 2023 to discuss the previous results of the MFT. We also met in April 2024 to talk about the benefit that participating in undergraduate research projects has for students. Although we cannot look specifically at the questions related to quantitative reasoning, we have found that students who participate in research have significantly higher MFT scores than students who do not, even when controlling for entrance standardized test scores. There are an increasing number of biology faculty mentoring undergraduate research projects, which may improve MFT scores in coming years.

Additionally, curricular changes have the potential to improve quantitative reasoning MFT scores. For the past two years, MATH 121 has been a co-requisite for BIOL 111. We hope that taking introductory math along with biology will provide students with a stronger quantitative foundation, which can be applied in later courses. Additionally, faculty in the department have revised the sophomore-level classes, evolution and botany, to teach students how to analyze data with the statistical software R. Although R is a powerful software, using it requires a steep learning curve. Students will be forced to think analytically about data, which may improve quantitative reasoning.

Upload Rubrics/Other Files

Goal 3

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Students will be able to explain and apply the process of science by formulating testable hypotheses, designing experiments, and collecting and analyzing data to draw conclusions about the degree to which data support their hypotheses.

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of selected questions about the process of science 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 2023-2024

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 the process of science)

Frequency of Assessment
Every spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
27%

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

Comments/Narrative
The percent of Lander students answering questions about the process of science on the MFT was as high as or higher than the national average on 27% of the questions. Students did not meet expectations for this outcome.

This year represents the worst results for this outcome since we began collecting this data. Over the previous 7 years, students have met expectations for this outcome in 4 of 7 years (57%) they were assessed, partially met expectations for this outcome in 1 of 7 years (14%), and failed to meet expectations for this outcome in the remaining 2 of 7 years (29%) they were assessed. With a relatively small number of students taking the MFT each year, it is difficult to determine whether these dramatic fluctuations represent real changes in student mastery of this important concept or are simply stochastic fluctuations in intrinsically noisy data. One way to minimize noise in the data is to report the 5-year rolling average. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (63%), 2022-2023 (61%), and 2023-2024 (52%). Using this metric, the students are

consistently meeting or partially meeting expectations for this outcome. We will continue to monitor success and look for longer-term patterns. We will continue to track success and actively seek ways to increase student involvement in the process of science throughout the program.

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. Resource identified as needed in 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024 assessment reports.

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 the process of science. The biology department will use these data to determine which specific areas of the program need improvement.

Goal Summary

Goal Summary/Comments
For this program goal, students partially met expectations for the assessed outcome.

Up until this year, students have met expectations for this outcome in 4 of 6 years (67%), partially met expectations for this outcome in 1 of 6 years (17%), and failed to meet expectations for this outcome in the remaining 1 of 6 years (16%). Overall, we feel that this year is likely an outlier, and student progress and success on this goal will improve because of the amount of coverage and exposure to the process of science throughout their time in the program. One way to minimize noise in the data is to report the 5-year rolling average. We propose to report this revised metric going forward.

We will continue to track student success and find specific ways to address these topics throughout the relevant courses in our curriculum. For example, the Biology Department emphasizes the process of science in both class and laboratory instruction. Labs, particularly in BIOL 111-112 are primarily inquiry based, guiding students through the steps of the scientific process. Students learn to carefully observe natural phenomena, ask questions, form hypotheses, design experiments, and analyze and interpret the results of their experiments. Although the process is highly structured for these introductory classes, these courses provide the first step in scaffolding the skills students need to explain and apply the process of science. Additionally, the courses in the biology seminar series (BIOL 299, 399, and 499) are focused on reading, analyzing, and interpreting peer-reviewed journal articles in biology. The seminars expose students to the scientific process, and move students from understanding (BIOL 299) to analyzing and evaluating (BIOL 399) to synthesizing (BIOL 499) the process of science. Other courses within the biology department have revised the curriculum in various ways to emphasize the process of science. Additionally, several upper-level course instructors have incorporated course-embedded research to ensure that students repeatedly engage in the process of science (from project proposals, to carrying out research projects, to creating presentations of their research results).

Changes Made/Proposed Related to Goal
We met as a department in April 2024 to talk about the benefit that participating in undergraduate research projects has for students. Although we cannot look specifically at the questions related to the process of science, we have found that students who participate in research have significantly higher MFT scores than students who do not, even when controlling for entrance standardized test scores. It is reasonable to hypothesize that engaging in a project that requires students to implement the process of science will improve their scores on questions related to the process of science. Because an increasing number of biology faculty are mentoring undergraduate research projects, MFT scores may improve, especially in this area. We will continue to meet with the department to discuss the results of the MFT and will continue to think carefully about ways that we can better address the most difficult concepts in multiple courses throughout our curriculum.

Upload Rubrics/Other Files

Goal 4

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

Program Goal
Students will be able to navigate relevant primary literature, and identify and evaluate appropriate sources for a given topic.

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of Biology graduates who scored a 2 (Proficient) or a 3 (Advanced) on the “Resources” criterion of the Student Presentation Rubric

Timeframe for this Outcome
Academic Year 2023-2024

Performance Target for "Met"
At least 70% of students scored a 2 or a 3 on the “Resources” criterion 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 “Resources” criterion of the Student Presentation Rubric

Performance Target for "Not Met"
Fewer than 60% of students scored a 2 or a 3 on the “Resources” criterion of the Student Presentation Rubric

Assessment Measure Used	Frequency of Assessment

BIOL 499 Student Oral Presentation Rubric	Every fall and spring semester to students enrolled in BIOL 499
Data Collected for this Timeframe (Results) 100%	**Score (Met=3, Partially Met=2, Not Met=1)** 3

Comments/Narrative
100% of the students assessed scored a 2 or 3 on the “Resources” criterion of the presentation rubric in BIOL 499. Students met expectations for this outcome again this year. In addition, this year is the 5th year in a row where we have seen improvement in this assessment measure.

Over the past 7 years, students have met expectations for this outcome in every year they were assessed. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (84%), 2022-2023 (87%), and 2023-2024 (94%). Many changes have been implemented and fine-tuned throughout this time to better prepare students to meet this outcome (discussed in more detail in the program goal narrative below).

Resources Needed to Meet/Sustain Results
None

Explanation of How Resources Will Be Used
N/A

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Student Learning Outcome

Enter Outcome
Percent of Biology graduates who scored a 2 (Proficient) or a 3 (Advanced) on the “Content and Organization” criterion of the Student Presentation Rubric

Timeframe for this Outcome
Academic Year 2023-2024

Performance Target for "Met"
At least 70% of students scored a 2 or a 3 on the “Content and Organization” criterion 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 “Content and Organization”

criterion of the Student Presentation Rubric

Performance Target for "Not Met"
Fewer than 60% of students scored a 2 or a 3 on the “Content and Organization” criterion of the Student Presentation Rubric

Assessment Measure Used
BIOL 499 Student Oral Presentation Rubric

Frequency of Assessment
Every fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
91%

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

Comments/Narrative
91% of the students assessed scored a 2 or 3 on the “Content and Organization” criterion of the presentation rubric in BIOL 499. Students met expectations for this outcome again this year. This year is the 5th year in a row where we have seen improvement in this assessment measure.

Over the past 7 years, students have met expectations for this outcome in 6 of 7 years (86%) and failed to meet expectations for this outcome in 1 of 7 years (14%) they were assessed. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (70%), 2022-2023 (72%), and 2023-2024 (83%). Many changes have been implemented and fine-tuned throughout this time to better prepare students to meet this outcome (again, these are discussed in more detail in the program goal narrative below).

Resources Needed to Meet/Sustain Results

Explanation of How Resources Will Be Used

Goal Summary

Goal Summary/Comments
The Biology Department has made numerous changes to individual courses and the curriculum overall to increase students’ ability to navigate the primary literature and create useful and informative presentations based on this literature. Beginning in their first year, students in BIOL 111 and 112 laboratories begin to learn about primary literature and are exposed to specific, relevant examples of primary research as it relates to the course topics. Students read primary literature during the BIOL 303 course required of all majors and the biology seminar series (BIOL 299,399, 499) builds on this foundation. In BIOL 299, students learn to identify and evaluate sources for their appropriateness, read primary literature, and analyze and present on these articles in the course. In BIOL 399, students begin to choose their own papers and are expected to be able to identify and evaluate peer-reviewed articles. BIOL 399 culminates with students independently presenting a summary of one primary literature article of their own selection. In BIOL 499, students independently present a synthesis of three journal articles they choose. Throughout the series, students learn to select appropriate articles, carefully read the literature, and write summaries of the papers they read. In addition, several upper-level electives in the biology major have incorporated exposure to the primary literature in various ways, such as requiring students to use primary literature as references and having students participate in or lead discussions about primary literature. Students in the biology program historically had difficulty finding, understanding, participating in, and organizing discussions about primary literature, and this deficiency was one of the main reasons the seminar courses were expanded and are required of biology majors. We feel confident that these changes are, indeed, helping our students gain the key skill set they need to be successful

readers and interpreters of primary research.

Changes Made/Proposed Related to Goal
Currently, no substantive changes have been made recently to this goal; however, we will continue to monitor student success and think of additional ways to use primary literature in the courses we teach throughout the biology curriculum. However, in order to maintain consistency with other program goals, we propose reporting the 5-year rolling average for each outcome.

Upload Rubrics/Other Files

Goal 5

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

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).

Most goals have at least two outcomes measured.

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 2023-2024

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 fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
87%

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

Comments/Narrative
87% of students scored a 2 or a 3 on the “Effective Scientific Communication” criterion of the presentation rubric. Students met expectations for this outcome. These results are similar to those of the last few years. We continue to see good results for this outcome and believe that this is a real trend that is the product of our recent program changes or a combination of other factors.

Over the last 7 years, students have met expectations for this outcome in 6 of 7 years (86%) they were assessed and failed to meet expectations in 1 of 6 years (14%) they were assessed. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (73%), 2022-2023 (76%), and 2023-2024 (85%). We feel confident that our students generally make good progress towards improving their communication skills as they move through our program. We will continue to monitor this outcome and look for additional places in the curriculum that students can gain experience communicating science to their peers and beyond.

Over the last six years, students have met expectations for this outcome in 5 of 6 years (83%) they were assessed and failed to meet expectations in 1 of 6 years (17%) they were assessed. We feel confident that our students generally make good progress towards improving their communication skills as they move through our program. We will continue to monitor this outcome and look for additional places in the curriculum that students can gain experience communicating science to their peers and beyond.

Resources Needed to Meet/Sustain Results

Explanation of How Resources Will Be Used

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).

Most goals have at least two outcomes measured.

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 2023-2024

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 2.00 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 fall and spring semester to students enrolled in BIOL 499

Data Collected for this Timeframe (Results)
87%

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

Comments/Narrative
83% of students scored a 2 or a 3 on the “Appropriate Scientific Communication” criterion of the presentation rubric. Students met expectations for this outcome.

Over the last 7 years, students have met expectations for this outcome in 6 of 7 years (86%) of the years they were assessed and failed to meet expectations in 1 of 7 years (15%) they were assessed. We have been tracking this outcome long enough to report the 5-year rolling average from 2021-2022 (68%), 2022-2023 (72%), and 2023-2024 (83%). We feel confident that our students generally make good progress towards improving their communication skills as they move through our program. We will continue to monitor this outcome and look for additional places in the curriculum that students can gain experience communicating science to their peers and beyond.

Resources Needed to Meet/Sustain Results

Explanation of How Resources Will Be Used

Goal Summary

Goal Summary/Comments

Students met the expectations for all outcomes used to assess this goal. It is the hope of the faculty teaching these courses that students are gaining communication skills from repeated practice in their courses within the biology program and in their general education and elective courses. We will continue to monitor progress on this goal over the next few years to allow us to differentiate between true patterns in the data and expected year-to-year fluctuations.

Changes Made/Proposed Related to Goal
Overall, members of the biology department believe that the seminar series (BIOL 299, 399, and 499) has been very successful, as evidenced by the consistent ability of students to meet expectations for the outcomes in this goal. We continue to meet as a department to discuss how skills can be scaffolded in early seminar courses so that students are prepared for later courses. In order to maintain consistency with other program goals, we propose reporting the 5-year rolling average for each outcome.

Upload Rubrics/Other Files

Goal 6

Program Goals are broad and overarching statements about the skills, knowledge, and dispositions students are expected to gain by the end of their course of study (big picture). They support the Institution's Mission/Goals.

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

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Major enrollment

Timeframe for this Outcome
Academic Year 2023-2024

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
Enrollment and Graduation data extracted from Banner

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
171.6

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. However, over the past few years the headcount in the biology department has been decreasing. This may be in part because the Medical Biology program began in Fall 2022. Students who would have otherwise majored in biology may be choosing medical biology in order to have a degree more relevant to their career goals. We are not concerned with the decrease because the biology major is still one of the largest on campus and faculty would like students to be able to choose majors according to their interests. Additionally, the medical biology program may ultimately attract more students to Lander, some of whom may eventually decide to major in biology.

Resources Needed to Meet/Sustain Results
None

Explanation of How Resources Will Be Used
N/A

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).

Most goals have at least two outcomes measured.

What type of Outcome would you like to add?
Operational Outcome

Enter Outcome
Completions (Degrees awarded)

Timeframe for this Outcome

Academic Year 2022-2023

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
Enrollment and Graduation data extracted from Banner

Frequency of Assessment
Annually

Data Collected for this Timeframe (Results)
25.2

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 have the opportunity to choose courses to fit their specific needs, and we think this is increasing retention and graduation of students in the biology major.

Resources Needed to Meet/Sustain Results
None

Explanation of How Resources Will Be Used
N/A

Goal Summary

Goal Summary/Comments
Overall, the biology program easily met both outcomes for the program goal again this year. 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. We are currently analyzing retention, success, and graduation rates in our program since 2014. We found that before the curriculum was changed, only 12% of students enrolled as freshmen in BIOL 111 graduated with a biology degree in 4 years, and only 32% of these students graduated with any degree within 4 years. However, since the change in the curriculum, 24% have graduated with a degree in biology within 4 years and 43% have graduated with any degree in that time. Although we would still like to improve retention, we are quite pleased that our curriculum change is associated with a doubling of biology graduation rates. Additionally, the increase is more dramatic for students with multiple risk factors for failure, including being and underrepresented minority, a first-generation student, a Pell-eligible student, or female.

Changes Made/Proposed Related to Goal
Both self-efficacy (i.e., the belief that one can succeed) and a sense of belonging are closely associated with student retention in STEM majors. The department has been working to increase belonging through activities engaging students outside the classroom. Five 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 still working on plans to include more students in their events and activities. 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. Participation in undergraduate research has been documented to increase student retention, likely by increasing both self-efficacy and a sense of belonging in science. We found that students who do conduct undergraduate research have 7.3 times higher odds of graduating than students who do not. The number of faculty mentoring undergraduate research students in the department has been increasing, which may improve the graduation rate of biology majors overall.

Upload Rubrics/Other Files

Dean's Email Address
jyates1@lander.edu

Approved by Dean?
Yes

Signature of Dean
Jennifer R. Yates

Comments from Dean's Review
This is a remarkably comprehensive report. I appreciate the thoughtfulness and effort that went into designing and administering these assessments. I wonder if all measures need to be addressed each year or if there is a pattern of alternating assessments that could give comparable data without the significant effort required each year.

Thank you for reviewing and approving this report. The approval and a copy of the report will be emailed to you and the Assessment Coordinator.