Analysis Questions and Analysis Answers

For Academic Programs

Informed by your assessment activities related to student learning, what changes have you made in your degree program in the last three to five years? Describe the changes (e.g., curriculum revision, new courses, faculty development), the general results that prompted the changes (e.g., student performance on an assessment measure), and any impact on student learning that you might attribute to these changes.

The implementation of the assessment activities during the past three years in the Department of Biological Sciences has resulted in the improvement of several areas in the Master of Science in Biology curriculum:

1. Quality of graduate course curriculum: In response to feedback from our departmental review and our graduate students, the faculty are in the process of creating and implementing a core graduate curriculum for all Biology M.S. graduate students with accompanying graduate course offerings that complement the student's research area.

2. Participation of Biology M.S. graduate students in professional meetings: The department continues to promote active participation of graduate students in professional meetings. We have implemented a yearly departmental research colloquium during which each graduate student presents a poster on their work. In the previous year 45% of graduate students presented their work in the research colloquium (participation is limited to one student per lab because of space limitations)

3. Faculty Service: 100% of our faculty are involved in outreach activities, including research publications (2.5 per faculty per year) and submission of research grants (2.7 submissions per faculty per year).

The impact of these assessment outcomes are as follows:

We have overhauled our Biology M.S. graduate curriculum to update and streamline our graduate course offerings and have a faculty retreat planned for this August where we will finalize these changes for addition to the graduate catalog. We are also planning to offer a targeted sequence of courses in our two major sections (Ecology, Evolution and Systematics and Molecular and Cell Biology) in response to feedback from our graduate students. The yearly research colloquium allows students to experience the breadth of research in the department and serves as a springboard for synergistic discussions amongst the students in different sections. These past three years of assessment have resulted in changes that complement the original tripartite goals (teaching, research & service) of the Department of Biological Sciences.

Mission / Purpose

The Mission of the Department of Biological Sciences is to provide high quality instruction to students at the undergraduate and graduate levels with an emphasis on active learning and problem solving. The department is committed to the advancement of knowledge through research and scholarly activities. Our faculty participates in outreach to the state, nation and world through service to the university community, to public, governmental and industrial sectors, and to professional societies. Within its areas of expertise, the department supports the tripartite mission of the University in teaching, research, and service.

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

SLO 1: Demonstrate Progress towards Specialty
Students who complete this program will demonstrate incremental progress in knowledge of their area of specialty.

Connected Document
MS Biology and Marine Science Curriculum Maps

Relevant Associations:
Student Learning Outcome #1 We will continue with the process of gathering data following current procedures:

The department will develop a more standardized rubric for reporting of data regarding assessment of student's at the MS level.

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

Related Measures
M 1: Student Committee
Each student's committee will review the performance of the student in courses and progress in research at annual reviews. The student's committee will assign a rating between 1 (worst) and 5 (best) based on their analysis of the student's progress toward the degree during the past year. Calculate the percent of students receiving a 4 or 5.

Source of Evidence: Academic direct measure of learning - other
Target:
Calculate the percentage of graduate students receiving a score of 4 to 5

M 2: Written and Oral Graduate Exams
Graduate committees will evaluate written and oral exams for graduate students, assessing their breadth and depth of knowledge. Students in the MS program in Biology, Microbiology or Marine Science/Biology must be able to pass at least 12 out of 15 of the questions on the written exam and perform on the oral exam at a level deemed satisfactory by each student's graduate committee. Calculate the percentage of students who meet the criteria on the first attempt.

Source of Evidence: Academic direct measure of learning - other
Target:
Calculate the percentage of graduate students passing their written and oral exams on the first attempt

M 3: Student Thesis
Students will present the results of their research in the form of a research paper or thesis accepted by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.

Source of Evidence: Senior thesis or culminating major project
Target:
Calculate the percentage of graduate students with a research paper or thesis accepted by their graduate committee on the first attempt

M 4: Oral Exams
Students must pass a final oral exam as judged by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.

Source of Evidence: Comprehensive/end-of-program subject matter exam
Target:
Calculate the percentage of graduate students passing a final oral exam on the first attempt

SLO 2: Literature Analysis
Students will analyze the literature and define scientific problems.

Connected Document
MS Biology and Marine Science Curriculum Maps

Relevant Associations:
Student Learning Outcome #2 Improvement Action(s) to be advanced:

We will continue with the process of gathering data following current procedures. The department will develop a more standardized rubric for reporting of data regarding assessment of student's at the MS level.

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
3.3 Encourage and reward creative strategies for engaging students in learning and life-long learning.
3.8 Equip classrooms, libraries, and laboratories for state-of-the-art learning.

Related Measures

M 5: Laboratory Observations
The student will be assessed for proficiency in the use of instrumentation and the ability to synthesize literature by observing the student in the laboratory and by discussing with the student areas for improvement. Faculty will provide evaluative summaries of the student in their annual review letter describing areas of proficiency and deficit in the past year. The student's committee will assign a rating between 1 (worst) and 5 (best) as described in the graduate student handbook of the Department of Biological Sciences based on their analysis of the student’s progress toward the degree during the past year.

Source of Evidence: Academic direct measure of learning - other
Target:
Based on the annual graduate student committee report calculate the percentage of students receiving a rating between 3 (average) and 5 (best)

M 6: Student Progress Committee Review
Each student's committee will review the performance of the student in courses and progress in research at annual
reviews. The student’s committee will describe areas of improvement and progress in the annual review letter. Faculty will provide evaluative summaries of the student in their annual review letter describing areas for improvement and progress toward their degree in the next academic year. The student’s committee will assign a rating between 1 (worst) and 5 (best) as described in the graduate student handbook of the Department of Biological Sciences based on their analysis of the student’s progress toward the degree during the past year and the student’s improvement on items identified in the last annual review.

Source of Evidence: Academic direct measure of learning - other

Target:
We will analyze the graduate student annual review reports and calculate the percentage of students assigned between 3.5 (average) and 5 (best)

SLO 3: Planning and Problem Solving
Students will be capable of planning ways to solve scientific problems.

Connected Document
MS Biology and Marine Science Curriculum Maps

Relevant Associations:
Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
3.3 Encourage and reward creative strategies for engaging students in learning and life-long learning.
3.4 Increase involvement of undergraduate students in research and scholarly activities.

Related Measures

M 7: Observation by Faculty Mentors
The student will be assessed for proficiency in the ability to solve problems by faculty mentors observing the student in the laboratory and by discussing with the student areas for improvement. Faculty will also provide evaluative summaries of the student’s abilities in the annual review / departmental evaluation and address areas of improvement.

Source of Evidence: Academic direct measure of learning - other

Target:
Analysis of graduate student summary evaluation

M 8: Student Committee Review
Each student’s committee will review the performance of the student in courses and progress in research at annual reviews. The student’s committee will address areas of improvement and progress in the annual review letter and in the departmental evaluation form.

Source of Evidence: Academic direct measure of learning - other

Target:
Analysis of the graduate student summary annual reviews

SLO 5: Demonstrate Broad Understanding
Students who complete our M.S. program will demonstrate a broad understanding of the interdisciplinary nature of scientific inquiry, and will be researchers capable of conducting independent research.

Relevant Associations:
Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.

Related Measures

M 2: Written and Oral Graduate Exams
Graduate committees will evaluate written and oral exams for graduate students, assessing their breadth and depth of knowledge. Students in the MS program in Biology, Microbiology or Marine Science/Biology must be able to pass at least 12 out of 15 of the questions on the written exam and perform on the oral exam at a level deemed satisfactory by each student’s graduate committee. Calculate the percentage of students who meet the criteria on the first attempt.

Source of Evidence: Academic direct measure of learning - other

M 4: Oral Exams
Students must pass a final oral exam as judged by their graduate committee. Calculate the percent of students
meeting criteria on the first attempt.

Source of Evidence: Comprehensive/end-of-program subject matter exam

**M 10: Conference Participation**
This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of 1 grant per faculty member per year.

Source of Evidence: Activity volume

### Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

**OthOtcn 4: Faculty Research Programs**
Biological Sciences faculty will build research programs that contribute to the discipline, will provide training opportunities for undergraduate and graduate students, will obtain grant funding and will publish.

**Relevant Associations:**
Department Outcome #3 Improvement Action(s) to be advanced:

The chair will continue to implement current processes to further improve the grant and publication rate of the faculty

**Standard Associations**

**SACS 3.3.1**

3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission

**Strategic Plan Associations**

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.4 Align resources to most effectively support academic, scholarship, and research excellence priorities.
2.4 Increase the number of graduate research and teaching assistants and provide them with competitive salaries and benefits.
3.4 Increase involvement of undergraduate students in research and scholarly activities.

**Related Measures**

**M 9: Analysis of Faculty Activity Reports**
This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be the mentoring of at least two undergraduate and two graduate students per faculty per year.

Source of Evidence: Administrative measure - other

**Target:**
Analysis of annual faculty activity reports to calculate the average number of undergraduate and graduates students per faculty per year

**M 10: Conference Participation**
This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of 1 grant per faculty member per year.

Source of Evidence: Activity volume

**Target:**
Analysis of the annual faculty activity report to calculate the average of submitted grants per faculty member per year

**M 11: Faculty Publications**
This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of one publication per faculty per year.

Source of Evidence: Activity volume

**Target:**
Analysis of the annual faculty activity report to calculate the average number of publications per faculty per year
Mission / Purpose

The Mission of the Department of Biological Sciences is to provide high quality instruction to students at the undergraduate and graduate levels with an emphasis on active learning and problem solving. The department is committed to the advancement of knowledge through research and scholarly activities. Our faculty participates in outreach to the state, nation and world through service to the university community, to public, governmental and industrial sectors, and to professional societies. Within its areas of expertise, the department supports the tripartite mission of the University in teaching, research, and service.

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

SLO 1: Demonstrate Progress towards Specialty
Students who complete this program will demonstrate incremental progress in knowledge of their area of specialty.

Connected Document
MS Biology and Marine Science Curriculum Maps

Relevant Associations:
Student Learning Outcome #1 We will continue with the process of gathering data following current procedures:

The department will develop a more standardized rubric for reporting of data regarding assessment of student's at the MS level.

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

Related Measures

M 1: Student Committee
Each student’s committee will review the performance of the student in courses and progress in research at annual reviews. The student’s committee will assign a rating between 1 (worst) and 5 (best) based on their analysis of the student’s progress toward the degree during the past year. Calculate the percent of students receiving a 4 or 5.

Source of Evidence: Academic direct measure of learning - other

Target:
Calculate the percentage of graduate students receiving a score of 4 to 5

Finding (2012-2013) - Target: Partially Met
The number of Master's students who received a rating of 4 or 5 is 7; this represents 17% of our Biology M.Sc. students. This number is lower than last year due to a disproportionate number of first year Master's students who received an average score of 3-3.5.

M 2: Written and Oral Graduate Exams
Graduate committees will evaluate written and oral exams for graduate students, assessing their breadth and depth of knowledge. Students in the MS program in Biology, Microbiology or Marine Science/Biology must be able to pass at least 12 out of 15 of the questions on the written exam and perform on the oral exam at a level deemed satisfactory by each student's graduate committee. Calculate the percentage of students who meet the criteria on the first attempt.

Source of Evidence: Academic direct measure of learning - other

Target:
Calculate the percentage of graduate students passing their written and oral exams on the first attempt

Finding (2012-2013) - Target: Met
100% of master graduate students obtained a passing grade in their written and oral exams during the previous year.

M 3: Student Thesis
Students will present the results of their research in the form of a research paper or thesis accepted by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.
Source of Evidence: Senior thesis or culminating major project

**Target:**
Calculate the percentage of graduate students with a research paper or thesis accepted by their graduate committee on the first attempt

**Finding (2012-2013) - Target: Met**
100% of graduate students had a research report or thesis accepted by their graduate committee on the first attempt.

**M 4: Oral Exams**
Students must pass a final oral exam as judged by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.

Source of Evidence: Comprehensive/end-of-program subject matter exam

**Target:**
Calculate the percentage of graduate students passing a final oral exam on the first attempt

**Finding (2012-2013) - Target: Met**
A total of 100% Master Graduate Students obtained a passing grade on the final oral exam on the first attempt

**SLO 2: Literature Analysis**
Students will analyze the literature and define scientific problems.

**Connected Document**
MS Biology and Marine Science Curriculum Maps

**Relevant Associations:**
Student Learning Outcome #2 Improvement Action(s) to be advanced:

We will continue with the process of gathering data following current procedures. The department will develop a more standardized rubric for reporting of data regarding assessment of student's at the MS level.

**Standard Associations**
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

**Strategic Plan Associations**
University of Alabama
3.3 Encourage and reward creative strategies for engaging students in learning and life-long learning. 3.8 Equip classrooms, libraries, and laboratories for state-of-the-art learning.

**Related Measures**

**M 5: Laboratory Observations**
The student will be assessed for proficiency in the use of instrumentation and the ability to synthesize literature by observing the student in the laboratory and by discussing with the student areas for improvement. Faculty will provide evaluative summaries of the student in their annual review letter describing areas of proficiency and deficit in the past year. The student’s committee will assign a rating between 1 (worst) and 5 (best) as described in the graduate student handbook of the Department of Biological Sciences based on their analysis of the student’s progress toward the degree during the past year.

Source of Evidence: Academic direct measure of learning - other

**Target:**
Based on the annual graduate student committee report calculate the percentage of students receiving a rating between 3 (average) and 5 (best)

**Finding (2012-2013) - Target: Met**
100% of students received a rating of 3 or better from their graduate committees.

**M 6: Student Progress Committee Review**
Each student’s committee will review the performance of the student in courses and progress in research at annual reviews. The student’s committee will describe areas of improvement and progress in the annual review letter. Faculty will provide evaluative summaries of the student in their annual review letter describing areas for improvement and progress toward their degree in the next academic year. The student’s committee will assign a rating between 1 (worst) and 5 (best) as described in the graduate student handbook of the Department of Biological Sciences based on their analysis of the student’s progress toward the degree during the past year and the student’s improvement on items identified in the last annual review.

Source of Evidence: Academic direct measure of learning - other

**Target:**
Analyze the graduate student annual review reports and calculate the percentage of students assigned between 3 (average) and 5 (best)

**Finding (2012-2013) - Target: Met**
100% of students received a rating of 3 or better from their graduate committees. No student was dropped or placed on probation since all of them were above average.

**SLO 3: Planning and Problem Solving**
Students will be capable of planning ways to solve scientific problems.
Connected Document
MS Biology and Marine Science Curriculum Maps

Relevant Associations:
Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
3.3 Encourage and reward creative strategies for engaging students in learning and life-long learning.
3.4 Increase involvement of undergraduate students in research and scholarly activities.

Related Measures

M 7: Observation by Faculty Mentors
The student will be assessed for proficiency in the ability to solve problems by faculty mentors observing the student in the laboratory and by discussing with the student areas for improvement. Faculty will also provide evaluative summaries of the student's abilities in the annual review / departmental evaluation and address areas of improvement.

Source of Evidence: Academic direct measure of learning - other
Target:
Analysis of graduate student summary evaluation

Finding (2012-2013) - Target: Met
All faculty mentors (100%) provided an annual summary evaluation of their graduate students and reported satisfactory progress of students in their proficiency to solve problems.

M 8: Student Committee Review
Each student's committee will review the performance of the student in courses and progress in research at annual reviews. The student's committee will address areas of improvement and progress in the annual review letter and in the departmental evaluation form.

Source of Evidence: Academic direct measure of learning - other
Target:
Analysis of the graduate student summary annual reviews

Finding (2012-2013) - Target: Met
All faculty mentors (100%) provided an annual summary evaluation of their graduate students and reported satisfactory progress of students in their courses and research progress.

SLO 5: Demonstrate Broad Understanding
Students who complete our M.S. program will demonstrate a broad understanding of the interdisciplinary nature of scientific inquiry, and will be researchers capable of conducting independent research.

Relevant Associations:
Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.

Related Measures

M 2: Written and Oral Graduate Exams
Graduate committees will evaluate written and oral exams for graduate students, assessing their breath and depth of knowledge. Students in the MS program in Biology, Microbiology or Marine Science/Biology must be able to pass at least 12 out of 15 of the questions on the written exam and perform on the oral exam at a level deemed satisfactory by each student's graduate committee. Calculate the percentage of students who meet the criteria on the first attempt.

Source of Evidence: Academic direct measure of learning - other

M 4: Oral Exams
Students must pass a final oral exam as judged by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.

Source of Evidence: Comprehensive/end-of-program subject matter exam

M 10: Conference Participation
This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of 1 grant per faculty member per year.

Source of Evidence: Activity volume
Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

**OthOtcM 4: Faculty Research Programs**

Biological Sciences faculty will build research programs that contribute to the discipline, will provide training opportunities for undergraduate and graduate students, will obtain grant funding and will publish.

**Relevant Associations:**

Department Outcome #3 Improvement Action(s) to be advanced:

The chair will continue to implement current processes to further improve the grant and publication rate of the faculty

**Standard Associations**

- **SACS 3.3.1**
  - 3.3.1.1 Educational programs, to include student learning outcomes
  - 3.3.1.4 Research within its educational mission

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.4 Align resources to most effectively support academic, scholarship, and research excellence priorities.
2.4 Increase the number of graduate research and teaching assistants and provide them with competitive salaries and benefits.
3.4 Increase involvement of undergraduate students in research and scholarly activities.

**Related Measures**

**M 9: Analysis of Faculty Activity Reports**

This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be the mentoring of at least two undergraduate and two graduate students per faculty per year.

Source of Evidence: Administrative measure - other

**Target:**

Analysis of annual faculty activity reports to calculate the average number of undergraduate and graduates students per faculty per year

**Finding (2012-2013) - Target: Met**

Greater than 95% of the faculty mentored two undergraduate and two graduate student per year.

**M 10: Conference Participation**

This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of 1 grant per faculty member per year.

Source of Evidence: Activity volume

**Target:**

Analysis of the annual faculty activity report to calculate the average of submitted grants per faculty member per year

**Finding (2012-2013) - Target: Met**

The average number of grants submitted per faculty was 2.6.

**M 11: Faculty Publications**

This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of one publication per faculty per year.

Source of Evidence: Activity volume

**Target:**

Analysis of the annual faculty activity report to calculate the average number of publications per faculty per year

**Finding (2012-2013) - Target: Met**

The average number of publications published per faculty per year was 2.0.
Mission / Purpose

The Mission of the Department of Biological Sciences is to provide high quality instruction to students at the undergraduate and graduate levels with an emphasis on active learning and problem solving. The department is committed to the advancement of knowledge through research and scholarly activities. Our faculty participates in outreach to the state, nation and world through service to the university community, to public, governmental and industrial sectors, and to professional societies. Within its areas of expertise, the department supports the tripartite mission of the University in teaching, research, and service.

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

SLO 1: Demonstrate Progress towards Specialty
Students who complete this program will demonstrate incremental progress in knowledge of their area of specialty.

Connected Document
MS Biology and Marine Science Curriculum Maps

Relevant Associations:
Student Learning Outcome #1 We will continue with the process of gathering data following current procedures.

The department will develop a more standardized rubric for reporting of data regarding assessment of student's at the MS level.

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

Related Measures

M 1: Student Committee
Each student's committee will review the performance of the student in courses and progress in research at annual reviews. The student's committee will assign a rating between 1 (worst) and 5 (best) based on their analysis of the student's progress toward the degree during the past year. Calculate the percent of students receiving a 4 or 5.

Source of Evidence: Academic direct measure of learning - other

Target:
Calculate the percentage of graduate students receiving a score of 4 to 5

Finding (2011-2012) - Target: Met
The number of Master's students who received a rating of 4 or 5 is 16; this represents 38% of our Biology M.Sc. students

M 2: Written and Oral Graduate Exams
Graduate committees will evaluate written and oral exams for graduate students, assessing their breadth and depth of knowledge. Students in the MS program in Biology, Microbiology or Marine Science/Biology must be able to pass at least 12 out of 15 of the questions on the written exam and perform on the oral exam at a level deemed satisfactory by each student's graduate committee. Calculate the percentage of students who meet the criteria on the first attempt.

Source of Evidence: Academic direct measure of learning - other

Target:
Calculate the percentage of graduate students passing their written and oral exams on the first attempt

Finding (2011-2012) - Target: Met
100% of master graduate students obtained a passing grade in their written and oral exams during the previous year

M 3: Student Thesis
Students will present the results of their research in the form of a research paper or thesis accepted by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.
Source of Evidence: Senior thesis or culminating major project

**Target:**
Calculate the percentage of graduate students with a research paper or thesis accepted by their graduate committee on the first attempt

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**M 4: Oral Exams**
Students must pass a final oral exam as judged by their graduate committee. Calculate the percent of students meeting criteria on the first attempt.

Source of Evidence: Comprehensive/end-of-program subject matter exam

**Target:**
Calculate the percentage of graduate students passing a final oral exam on the first attempt

**Finding (2011-2012) - Target: Met**
A total of 21% Master Graduate Students obtained a passing grade on the final oral exam on the first attempt

**SLO 2: Literature Analysis**
Students will analyze the literature and define scientific problems.

**Connected Document**
MS Biology and Marine Science Curriculum Maps

**Relevant Associations:**
Student Learning Outcome #2 Improvement Action(s) to be advanced:

We will continue with the process of gathering data following current procedures. The department will develop a more standardized rubric for reporting of data regarding assessment of student’s at the MS level.

**Standard Associations**
*SACS 3.3.1*
3.3.1.1 Educational programs, to include student learning outcomes

**Strategic Plan Associations**
University of Alabama
3.3 Encourage and reward creative strategies for engaging students in learning and life-long learning.
3.8 Equip classrooms, libraries, and laboratories for state-of-the-art learning.

**Related Measures**

**M 5: Laboratory Observations**
The student will be assessed for proficiency in the use of instrumentation and the ability to synthesize literature by observing the student in the laboratory and by discussing with the student areas for improvement. Faculty will provide evaluative summaries of the student in their annual review letter describing areas of proficiency and deficit in the past year. The student's committee will assign a rating between 1 (worst) and 5 (best) as described in the graduate student handbook of the Department of Biological Sciences based on their analysis of the student's progress toward the degree during the past year.

Source of Evidence: Academic direct measure of learning - other

**Target:**
Based on the annual graduate student committee report calculate the percentage of students receiving a rating between 1 (worst) and 5 (best)

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**M 6: Student Progress Committee Review**
Each student's committee will review the performance of the student in courses and progress in research at annual reviews. The student's committee will describe areas of improvement and progress in the annual review letter. Faculty will provide evaluative summaries of the student in their annual review letter describing areas for improvement and progress toward their degree in the next academic year. The student's committee will assign a rating between 1 (worst) and 5 (best) as described in the graduate student handbook of the Department of Biological Sciences based on their analysis of the student's progress toward the degree during the past year and the student's improvement on items identified in the last annual review.

Source of Evidence: Academic direct measure of learning - other

**Target:**
Analyze the graduate student annual review reports and calculate the percentage of students assigned between 1 (worst) and 5 (best)

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**SLO 3: Planning and Problem Solving**
Students will be capable of planning ways to solve scientific problems.

**Connected Document**
MS Biology and Marine Science Curriculum Maps
**Relevant Associations:**

**Standard Associations**

*SACS 3.3.1*

3.3.1.1 Educational programs, to include student learning outcomes

**Strategic Plan Associations**

University of Alabama

3.3 Encourage and reward creative strategies for engaging students in learning and life-long learning.

3.4 Increase involvement of undergraduate students in research and scholarly activities.

**Related Measures**

**M 7: Observation by Faculty Mentors**

The student will be assessed for proficiency in the ability to solve problems by faculty mentors observing the student in the laboratory and by discussing with the student areas for improvement. Faculty will also provide evaluative summaries of the student’s abilities in the annual review / departmental evaluation and address areas of improvement.

Source of Evidence: Academic direct measure of learning - other

**Target:**

Analysis of graduate student summary evaluation

**Finding (2011-2012) - Target: Not Reported This Cycle**

Data not available this year

**M 8: Student Committee Review**

Each student’s committee will review the performance of the student in courses and progress in research at annual reviews. The student’s committee will address areas of improvement and progress in the annual review letter and in the departmental evaluation form.

Source of Evidence: Academic direct measure of learning - other

**Target:**

Analysis of the graduate student summary annual reviews

**Finding (2011-2012) - Target: Not Reported This Cycle**

Data not available this year

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**Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans**

**OthOtcn 4: Sustain High Level of Recognized Quality**

The program will improve and sustain a high level of recognized quality.

**Relevant Associations:**

**Standard Associations**

*SACS 3.3.1*

3.3.1.1 Educational programs, to include student learning outcomes

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.

**Related Measures**

**M 9: Analyze Strengths**

We will use the 8-year program review to analyze our strengths.

Source of Evidence: Evaluations

**Target:**

Analyze the 8-year program review for search of strengths

**Finding (2011-2012) - Target: Not Reported This Cycle**

Data not available this year

**M 10: Search for Opportunities for Improvement**

We will use the 8-year program review to search for opportunities for improvement.

Source of Evidence: Evaluations

**Target:**

Analyze the 8-year program review in search for opportunities for improvement

**Finding (2011-2012) - Target: Not Reported This Cycle**

Data not available this year

**M 11: Collaboration and Communication**

Faculty retreats, weekly seminars, annual graduate picnic, annual welcome gatherings and monthly faculty meetings have improved the collaboration and communication among students, staff and faculty. A new building was recently completed (Science and Engineering Complex) to house most of the faculty in order to improve teaching and research infrastructure in the department.
Source of Evidence: Administrative measure - other

Target:
To monitor collaboration and communication by calculating the number of faculty retreats, weekly seminars, faculty meetings and other gatherings among students, staff and faculty

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

OthOtcm 5: Sustain Optimal Level of Enrollment
The program will build and sustain an optimal level of annual program enrollments and degree completion.

Relevant Associations:

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations
University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.4 Align resources to most effectively support academic, scholarship, and research excellence priorities.

Related Measures

M 12: Graduate Credit Hour Production
We will calculate the graduate semester credit hour production for the last three fall semesters.

Source of Evidence: Administrative measure - other

Target:
Calculate the the graduate semester credit hour production for the last three fall semesters

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

M 13: Number of Courses and Sections
We will calculate the number of graduate courses and sections offered for the last three fall semesters.

Source of Evidence: Existing data

Target:
Calculate the number of graduate courses and sections offered for the last three fall semesters.

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

M 14: Number of Students in MS Program
We will calculate the number of students in the Master’s program in Biology/Marine Science for the last three fall semesters.

Source of Evidence: Administrative measure - other

Target:
Calculate the number of students in the Master's program in Biology/Marine Science for the last three fall semesters.

Finding (2011-2012) - Target: Met
The number of students registered for the Biology Master's program for 2012-2013 is 42 students

M 15: Number of Degrees Awarded in Majors
We will calculate the number of degrees awarded in the Master’s program in Biology/Marine Science for last three years (August, December, and May).

Source of Evidence: Administrative measure - other

Target:
Calculate the number of degrees awarded in the Master's program in Biology/Marine Science for last three years (August, December, and May).

Finding (2011-2012) - Target: Met
Total number of Master’s degrees awarded in 2011-2012 was 9

OthOtcm 6: Highly Valued by Program Graduates
The program will be highly valued by its program graduates and other key constituencies it serves.

Relevant Associations:

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.5 Community/public service within its educational mission

Strategic Plan Associations
University of Alabama
4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.
4.7 Support our alumni in serving as leaders in their professions and communities.

Related Measures

M 16: New Rubrics to Gauge Student Satisfaction
New rubrics will be implemented in order to gauge student satisfaction with the Master's degree program in Biology/Marine Science.

Source of Evidence: Student satisfaction survey at end of the program

Target:
Calculate the percentage of new rubrics implemented in order to gauge student satisfaction with the Master's degree program in Biology/Marine Science.

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

M 17: Students Polis
We will gather information from faculty regarding informal polling of Master's students regarding their satisfaction with the program and recommendations for improvement.

Source of Evidence: Student satisfaction survey at end of the program

Target:
Contact faculty members to request informal information of Master's students regarding their satisfaction with the program and recommendations for improvement.

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

M 18: Analyze Application Letters
We will analyze letters of application to our Master's programs in Biology/Marine Science to obtain information on aspects of our Master's program that are most valued.

Source of Evidence: Document Analysis

Target:
Analyze application letters to our Master's program in Biology/Marine Science to obtain information on aspects of our Master's program that are most valued.

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

M 19: Informal Student Feedback
The chair or the head of the graduate committee will meet at least twice a semester with graduate students for a pizza dinner to get feedback from the graduate students on their satisfaction with the program.

Source of Evidence: Discussions / Coffee Talk

Target:
Request a semester report from the head of the graduate committee on the graduate student feedback satisfaction with the program

Finding (2011-2012) - Target: Not Reported This Cycle
Data not available this year

OthOtcm 7: Fostering Fundamental Understanding
The Department will offer courses that foster an understanding of fundamental biological principles, their experimental foundations, and their interface with chemistry, physics and mathematics.

Relevant Associations:

Department Outcome #1 Improvement Action(s) to be advanced:

We will continue with the current processes and implementations. The department has developed a more standardized rubric for reporting of data regarding assessment of student’s at the 100 and 200 level in light of the data from our recent program review.

Standard Associations

SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

Strategic Plan Associations

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.4 Align resources to most effectively support academic, scholarship, and research excellence priorities.
2.8 Promote collaborative research approaches to address large scale problems of regional and national interest.

Related Measures

M 20: Assess for Breadth and Depth
We will assess our course offerings and content for breadth and depth of coverage each year.

Source of Evidence: Administrative measure - other

Target:
Analyze courses offered each year to offer breadth and depth of coverage

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**M 21: Course Demand**
During the pre-semester registration for Spring and Fall 2011 and 2012 courses, we will track courses to identify those that are filled to capacity. This assessment will provide us a semblance of student demand and need for courses.

Source of Evidence: Administrative measure - other

**Target:**
To assess the number of courses filled to capacity during the pre-semester registration

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**M 22: Senior Biology Majors Assessment Survey**
All graduating senior biology majors will complete a Senior Biology Majors Assessment survey asking whether they completed courses that incorporated this goal, and how well the courses provided these experiences. The goal of the Department is that 70% of the students will answer very good or excellent.

Source of Evidence: Student course evaluations on learning gains made

**Target:**
To calculate the percentage of students answering very good or excellent

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**M 23: Assess for Level of Conceptual Knowledge**
Pre-test/post-tests will be used in 100-level courses to assess the level of conceptual knowledge that students attain during the courses. We will consider a level of 70% of students passing at post-test acceptable.

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

**Target:**
Calculate the percentage of students passing post-tests

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**OthOtcm 8: Offer Courses Emphasizing Conceptual Knowledge**
The Department will offer courses that emphasize a conceptual knowledge of molecular and cellular biology, organismal biology, physiological principles, and population to ecosystem understandings.

**Relevant Associations:**
Department Outcome #2 Improvement Action(s) to be advanced:

We will continue with the current processes and implementations. We will revisit the content and usefulness of our rubric in light of our upcoming program review.

**Standard Associations**
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

**Strategic Plan Associations**
University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.4 Align resources to most effectively support academic, scholarship, and research excellence priorities.

**Related Measures**

**M 20: Assess for Breadth and Depth**
We will assess our course offerings and content for breadth and depth of coverage each year.

Source of Evidence: Administrative measure - other

**M 21: Course Demand**
During the pre-semester registration for Spring and Fall 2011 and 2012 courses, we will track courses to identify those that are filled to capacity. This assessment will provide us a semblance of student demand and need for courses.

Source of Evidence: Administrative measure - other

**Target:**
To assess the number of courses filled to capacity during the pre-semester registration

**Finding (2011-2012) - Target: Not Reported This Cycle**
Data not available this year

**M 24: Survey Goals**
All graduating senior biology majors will complete the Senior Biology Majors Assessment Survey asking whether they completed courses that incorporated this goal, and how well the courses provided these experiences. The goal of the Department is that 70% of the students will answer very good or excellent.
Source of Evidence: Client satisfaction survey (student, faculty)

**Target:**
Calculate the percentage of students answering very good or excellent

**Finding (2011-2012) - Target:** Not Reported This Cycle
Data not available this year

**OthOtcn 9: Faculty Research Programs**

Biological Sciences faculty will build research programs that contribute to the discipline, will provide training opportunities for undergraduate and graduate students, will obtain grant funding and will publish.

**Relevant Associations:**
Department Outcome #3 Improvement Action(s) to be advanced:

The chair will continue to implement current processes to further improve the grant and publication rate of the faculty

**Standard Associations**

SACS 3.3.1

3.3.1.1 Educational programs, to include student learning outcomes

3.3.1.4 Research within its educational mission

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.

1.4 Align resources to most effectively support academic, scholarship, and research excellence priorities.

2.4 Increase the number of graduate research and teaching assistants and provide them with competitive salaries and benefits.

3.4 Increase involvement of undergraduate students in research and scholarly activities.

**Related Measures**

**M 25: Analysis of Faculty Activity Reports**

This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be the mentoring of at least two undergraduate and two graduate students per faculty per year.

Source of Evidence: Administrative measure - other

**Target:**
Analysis of annual faculty activity reports to calculate the average number of undergraduate and graduates students per faculty per year

**Finding (2011-2012) - Target:** Met
Greater than 95% of the faculty mentored two undergraduate and two graduate student per year

**M 26: Conference Participation**

This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of 1 grant per faculty member per year.

Source of Evidence: Activity volume

**Target:**
Analysis of the annual faculty activity report to calculate the average of submitted grants per faculty member per year

**Finding (2011-2012) - Target:** Not Reported This Cycle

**M 27: Faculty Publications**

This outcome will be measured through analysis of annual faculty activity reports and annual faculty conferences with the department chair. The threshold level will be an average of one publication per faculty per year.

Source of Evidence: Activity volume

**Target:**
Analysis of the annual faculty activity report to calculate the average number of publications per faculty per year

**Finding (2011-2012) - Target:** Not Reported This Cycle

The average number of publications published per faculty per year was 2.1

**OthOtcn 10: Faculty Services**

Biological Sciences faculty will provide services to the university, discipline and profession.

**Relevant Associations:**
Department Outcome #n Improvement Action(s) to be advanced:

The chair will continue to implement current processes to further improve and expand the level of service of the faculty to the department, university, local community and profession.

**Standard Associations**

SACS 3.3.1

3.3.1.1 Educational programs, to include student learning outcomes
Strategic Plan Associations
University of Alabama
1.2 Increase the recognition of the University’s service priorities that enhance the quality of life for all Alabamians.
   4.1 Provide leadership in addressing economic, social, and cultural issues in Alabama through research and outreach activities.
   4.2 Promote collaboration with business, non-profit, and governmental agencies to advance the economic, social, and cultural condition of Alabama.

Related Measures

M 28: Faculty Committee Positions
100% of the faculty will be expected to serve as members of university, community, or professional committees. Service will be assessed through analysis of annual faculty activity reports and annual faculty conferences with the department chair. All faculty will be expected to provide service at the department, university and/or professional level.

Source of Evidence: Activity volume

Target:
Analysis of the annual faculty activity report to calculate the percentage of faculty members providing service at the department, university and/or professional level committees

Finding (2011-2012) - Target: Met
The percentage of faculty serving in committees is 100%

M 29: Grant Review
100% of faculty will be expected to serve as reviewers of manuscripts and/or grants. Service will be assessed through analysis of annual faculty activity reports and annual faculty conferences with the department chair. All faculty will be expected to provide service at the department, university and/or professional level.

Source of Evidence: Activity volume

Target:
Analysis of the annual faculty activity report to calculate the percentage of faculty members participating as a reviewers of manuscripts and/or grants

Finding (2011-2012) - Target: Met
The percentage of faculty members participating as reviewers for manuscripts and/or grants was 100%.

M 30: Faculty Leadership Positions
100% of faculty will be expected to hold leadership positions at the university, community, or professional levels. Service will be assessed through analysis of annual faculty activity reports and annual faculty conferences with the department chair. All faculty will be expected to provide service at the department, university and/or professional level.

Source of Evidence: Activity volume

Target:
Analysis of the annual faculty activity report to calculate the percentage of faculty holding leadership positions at the university, community, or professional levels

Finding (2011-2012) - Target: Met
The percentage of faculty holding leadership positions at the University, community, or professional levels was 100%.
Curriculum Maps #I (In which courses or in what activities or assignments are Student Learning Outcomes Addressed)

Use “Introduce” when outcome is first address; “Reinforce” when outcome is reinforced; and “Master” when outcome is expected to be mastered. Note that you do not need to obtain a measure from every course in which an outcome is addressed (see Map #2)

<table>
<thead>
<tr>
<th>Course</th>
<th>Student Learning Outcome 1</th>
<th>Student Learning Outcome 2</th>
<th>Student Learning Outcome 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course 1</td>
<td>Introduce, Reinforce and Master</td>
<td>Introduce, Reinforce and Master</td>
<td>Introduce, Reinforce and Master</td>
</tr>
<tr>
<td>Course 2</td>
<td>Introduce, Reinforce and Master</td>
<td>Introduce, Reinforce and Master</td>
<td>Introduce, Reinforce and Master</td>
</tr>
<tr>
<td>Course 3</td>
<td>Introduce, Reinforce and Master</td>
<td>Introduce, Reinforce and Master</td>
<td>Introduce, Reinforce and Master</td>
</tr>
</tbody>
</table>

Curriculum Map II  (What assessment measures will be employed in which courses/activities/assignments for each Student learning Outcome)

Indicate which measure is being obtained in which course by typing “Measure n.n” in the appropriate cell. If you’d rather use a description of the measure, that is fine. Also, indicate the year/semester in which the measure will be obtained (e.g., Fall 2011). Student learning outcomes must be assessed at least once within a 2 ½ year period. Note that a measure does not need to be obtained from every course in which an outcome is covered (see Map #1).

<table>
<thead>
<tr>
<th>Course 1</th>
<th>Student Learning Outcome 1</th>
<th>Student Learning Outcome 2</th>
<th>Student Learning Outcome 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course 1</td>
<td>BSC 599 Thesis Research</td>
<td>1. Observed proficiency by mentor in use of instrumentation 2. Observed proficiency by mentor in the ability to synthesize literature</td>
<td>3. Observed proficiency by mentor in use of instrumentation</td>
</tr>
<tr>
<td>Course 2</td>
<td>BSC 602 Mol Res Seminar</td>
<td>1. Observed proficiency by mentor in use of instrumentation 2. Observed proficiency by mentor in the ability to synthesize literature</td>
<td>1. Observed proficiency by mentor in use of instrumentation 2. Observed proficiency by mentor in the ability to synthesize literature</td>
</tr>
<tr>
<td>Course 3</td>
<td>BSC 605 Ecol/Syst Seminar</td>
<td>1. Observed proficiency by mentor in use of instrumentation 2. Observed proficiency by mentor in the ability to synthesize literature</td>
<td>1. Observed proficiency by mentor in use of instrumentation 2. Observed proficiency by mentor in the ability to synthesize literature</td>
</tr>
<tr>
<td>Required Experience</td>
<td>BSC 606 Adv Ecol Syst Seminar</td>
<td>1. successfully answering at least 12 out of 15 discussion questions successful oral defense</td>
<td>1. performance of the student in courses 2. progress in research</td>
</tr>
<tr>
<td>Required Task</td>
<td>Comprehensive exams</td>
<td>1. research paper or thesis accepted by their graduate committee.</td>
<td>1. performance of the student in courses 2. progress in research</td>
</tr>
<tr>
<td>Required Task</td>
<td>Research Presentation or thesis</td>
<td>1. performance of the student in courses 2. progress in research</td>
<td>1. performance of the student in courses 2. progress in research</td>
</tr>
<tr>
<td>Required Task</td>
<td>Annual Reviews</td>
<td>1. performance of the student in courses 2. progress in research</td>
<td>1. performance of the student in courses 2. progress in research</td>
</tr>
</tbody>
</table>