

**DEGREE PROGRAM
STUDENT LEARNING REPORT**

(Form Rev. October 2013)

ROGERS STATE UNIVERSITY

Department of Biology
For Academic Year 2012-2013

Effectively assessing a degree program should address a number of factors:

- 1) Valid student learning outcomes should be developed;
- 2) Valid assessment measures should be used, consistent with the standards of professional practice;
- 3) There should be evidence that assessment data are being used by faculty to make necessary instructional or assessment changes; and
- 4) There should be evidence that instructional or assessment changes are being implemented to improve student learning.

Relationship of Degree Program (or Major) Learning Outcomes to Departmental and University Missions

Name of Degree, including Level and Major: AS Biology (003)

- 1) A. Insert and clearly state the school, department and degree program missions in the spaces below.

University Mission	School Mission	Department Mission	Degree Program Mission
Our mission is to ensure students develop the skills and knowledge required to achieve professional and personal goals in dynamic local and global communities.	Central to the mission of the School is the preparation of students to achieve professional and personal goals in their respective disciplines and to enable their success in dynamic local and global communities. Three departments comprise this School, the Departments of Biology, Health Science, and Math and Physical Science. These departments pledge to deliver existing and newly developed programs that meet student demands, and to be responsive to the evolving culture of academia in general and the sciences in particular. Our Strategy is to foster an academic setting of diverse curricula that inherently incorporates an environment of service and collegiality.	The mission of the Department of Biology at Rogers State University is to support students in their pursuit of knowledge in biology and life science.	The Associate of Science in Biological Science consists of the general education curriculum and the supporting science courses. In support of the mission of the University, the school, and the department, the degree seeks to develop a student with a broad and diverse background in science and general education.

B. Insert and clearly state school purposes, department purposes and degree program outcomes in the spaces below, making sure to align the degree program outcomes with their appropriate school and department purposes, and these outcomes and purposes with their appropriate university commitments.

University Commitments	School Purposes	Department Purposes	Degree Program Outcomes
<p>To provide quality associate, baccalaureate, and graduate degree opportunities and educational experiences which foster student excellence in oral and written communications, scientific reasoning and critical and creative thinking.</p>	<p>The Curriculum utilizes academically rigorous methodologies delivered by a quality faculty who possess a broad base of content knowledge and promote the acquisition, application and discussion of current subject matter. The School uses effective instructional techniques, empirical and evidenced-based inquiry, innovative technology, and a variety of learning environments for the purpose of enhancing student learning.</p>	<p>To increase the student's critical thinking and reasoning abilities. To prepare a student to matriculate into a four-year degree program in math or science related fields or graduate.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of general cellular processes. 2. Apply understanding of the taxonomy, morphology, and physiology of the Animal and Plant Kingdoms. 3. Demonstrate an understanding of the atom, compounds, matter, gases, solutions, atomic theory, bonding chemical reactions, and chemical kinetics.
<p>To promote an atmosphere of academic and intellectual freedom and respect for diverse expression in an environment of physical safety that is supportive of teaching and learning.</p>	<p>The School promotes a challenging, positive, and inquisitive Collegial environment of high ethical standards and frequent interactions between faculty and students to foster independent thought and the collegial exchange of ideas.</p>	<p>Demonstrate knowledge about the components and requirements of a safe lab environment To promote a positive learning environment in our classrooms and on campus.</p>	<p>4. Demonstrate knowledge about the components and requirements of a safe lab environment.</p>
<p>To provide a general liberal arts education that supports specialized academic program and prepares students for lifelong learning and service in a diverse society.</p>	<p>The School recognizes the importance of scientific literacy in general education and its contribution to the liberal studies curriculum of the university.</p>	<p>To increase the student's understanding and appreciation of the biological world, and his/her ability to apply this understanding to his/her personal and professional life. To increase the student's ability to interpret and understand his/her world.</p>	
<p>To provide students with a diverse, innovative faculty dedicated to excellence in teaching, scholarly pursuits and</p>			

University Commitments	School Purposes	Department Purposes	Degree Program Outcomes
continuous improvement of programs.			
To provide university-wide student services, activities and resources that complement academic programs.			
To support and strengthen student, faculty and administrative structures that promote shared governance of the institution.			
To promote and encourage student, faculty, staff and community interaction in a positive academic climate that creates opportunities for cultural, intellectual and personal enrichment for the University and the communities it serves.	<p>Our commitment to Service enhances the public welfare and economic development potential of our region by cultivating strategic partnerships with health and science-related industries, secondary and higher education institutions, and through active participation and leadership in civic and professional organizations by our faculty and students. These collaborative efforts are based on the belief that through shared relationships, service reinforces and strengthens learning, and learning reinforces and strengthens service. An emphasis of service encourages social awareness and responsibility among faculty and students.</p>	<p>To increase the student's awareness of the benefits of incorporation of technology into science studies.</p> <p>To serve as a resource for the community; utilizing the expertise of the faculty.</p>	

Discussion of Instructional Changes Resulting from 2010-2011 Degree Program Student Learning Report

- 2) List and discuss all instructional or assessment changes proposed in last year's Degree Program Student Learning Report, whether implemented or not. Any other changes or assessment activities from last year, but not mentioned in last year's report, should be discussed here as well. Emphasis should be placed on student learning and considerations such as course improvements, the assessment process, and the budget. If no changes were planned or implemented, simply state "No changes were planned or implemented." See Example #1 at the end of this form.

Instructional or Assessment Changes	Changes Implemented (Y/N)	Impact of Changes on Degree Program Curriculum or Budget
<p>The program outcome "to provide a safe lab environment" was reworded to better reflect an outcome instead of restating the departmental purpose</p> <p>Instructional/Assessment Changes that have occurred in 2012-2013 but have not been mentioned.</p> <p>a. Hired one new faculty member that will help teach General Cellular Biology.</p> <p>b. Use of student lab fees to purchase significant new equipment</p> <p>c. The faculty reviewed the pre/post-test assessment exam and increased the number of questions to 50 (it was previously 40) and modified the questions to better</p>	Y	<p>This outcome was not measured last year (2012-2013) because no performance standard and sampling measure had been determined. Our new standard for this outcome will be: 100% of students will participate and pass the lab practical safety exercise (this will be a pass/fail exercise) in all of the Cellular Biology Labs.</p> <p>a. During the last school year (2011-2012) the biology department has lost two faculty members. The department has now been able to replace both of these positions</p> <p>b. Continued additional money collected from lab fees has been used to purchase new equipment for advancement of technology within the labs.</p> <p>c. No major impact is expected but may aid the students from a percentage standpoint moving from 40 to 50 questions.</p>

3) The University Assessment Committee in its Degree Program Peer Review Report provided feedback and recommendations for improvement in assessment. List or accurately summarize all feedback and recommendations from the committee, and state whether they were implemented or will be implemented at a future date. If they were not or will not be implemented, please explain why. If no changes were recommended last year, simply state "No changes were recommended."

Feedback and Recommended Changes from the University Assessment Committee	Suggestions Implemented (Y/N)	Changes that Were or Will Be Implemented, or Rationale for Changes that Were Not Implemented
Outcome 4 ("To provide a safe lab environment") is not a learning outcome. The following example would be: "Demonstrate knowledge about the components and	Y	The outcome "to provide a safe lab environment" has been changed to read "Demonstrate knowledge about the components and requirements of a safe lab environment." to better reflect an outcome statement.

Feedback and Recommended Changes from the University Assessment Committee	Suggestions Implemented (Y/N)	Changes that Were or Will Be Implemented, or Rationale for Changes that Were Not Implemented
requirements of a safe lab environment.”		
Consider adding an outcome to align with the department purpose of promoting a “positive learning environment in our classrooms and on campus.” It could be measured by a graduation student survey.	Response	The “to provide a positive learning environment in our classrooms and on campus” is appropriate as a departmental purposes, is not a degree program outcome. We dropped this outcome in 2010-2011 and in the past moderating post-graduates in the AS have not been reliable. For example some of our AS graduates continue on to the BS degree in biology, making it difficult to predict if they are A.S. or B.S. degree students.
Are measurement data submitted each semester or at the end of the second semester of the academic year? [This question is related to missing data problem.]	Response	Depending on who is teaching the course depends on when the assessment data is gathered. Some faculty who teach the General Cellular Biology more than one semester may wait until the end of the year to send forward the data. Also in the past two different committees (AS and General Ed.) were collecting some of the same data. In the future we will designate the biology department head as the individual to collect the assessment data and request each faculty submit the data at the end of the semester.
It was stated, “There is currently not a method in place to separate the A.S. and B.S. students within the assessed courses.”	Response	There is currently not good method in place to separate the A.S. and B.S. students within the assessed courses (see below). Students declaring or applying for the A.S. degree often do after 30 hours are completed, making it difficult to identify the A.S. students.
2a and 2 b are not assessment measures. They are statements that students in <i>General Botany</i> and <i>General Zoology</i> will be tested by the faculty about students’ knowledge in several specified areas. It is accurate to state for 2a, for example: “Unit exams that assess understanding of taxonomy, morphology, and physiology of plants”; or, for 2b: “Unit exams that assess understanding of taxonomy, morphology, and physiology of animals.”	Y	The terminology of this two assessment measures have been change to those recommended by the university assessment committee.
1. It is not clear whether the pre- and post-tests in <i>Cellular Biology</i> given to <u>all</u> sections?	Y	We have corrected this to read ALL sections of Cellular Biology

Feedback and Recommended Changes from the University Assessment Committee	Suggestions Implemented (Y/N)	Changes that Were or Will Be Implemented, or Rationale for Changes that Were Not Implemented
<p>4. There is no performance measure associated with the fourth outcome. Receiving training and signing a safety agreement does not reflect learning. Some measure should be developed to make this outcome more meaningful. Why can't a test or part of a test serve to evaluate what students know about good laboratory practices?</p> <p>Why do some outcomes (1, 3) incorporate pre/post test improvement ratios while others (2a and 2b) look at raw scores? It seems That using both measures (at least the post-test scores) would make sense to capture improvement and raw performance. It's also unfortunate that the new outcome 4 could not be assessed.</p>	<p>Y</p> <p>Response</p>	<p>See above</p> <p>Good labor practices are addressed above.</p> <p>General Cellular Biology uses pre/post tests because it is more practical to use this form of assessment for so many sections of a course taught by many different individuals on every campus.</p> <p>For Zoology 2205 and Botany 2104 assessing individual units provides a much more detailed analysis of student learning and changes can be specific based on topic. It can be used in courses with one section.</p>
<p>The standards are clearly defined. Although, as stated above: (1) We do not understand why post-test scores are not also used as knowledge markers, rather than just improvement indicators; (2) It is very hard to see how safety training and signing a safety agreement are measures of learning.</p>	<p>Response</p>	<p>To us the improvements seen between pre and post-test reflect an increase of knowledge and reflect knowledge markers.</p>
<p>When all students in a class are being measured, it is clarifying to expressly say so. For example, rather than writing "given to sections of Cellular Biology" state that the exam was "given to all sections of Cellular Biology." It's a minor point, but it removes any doubt.</p>	<p>Y</p>	<p>See above</p>
<p>Yes, with the exception of 2a (discussed below).</p>		
<p>Distribution data were provided for the results of the measures in outcomes 1 and 3, but not for 2b? Why?</p>	<p>Response</p>	<p>Distribution data for 2b was provided or those units where our standard was not met. We did not include the units where the standard was met, because we did not deem it necessary.</p>
<p>How can the pre- and post-test given in Cellular Biology measure such different learning outcomes:</p>	<p>Response</p>	<p>The questions on the Pre- and post-test given in Gen. Cellular Biology pertain to those units covered in the class which include units over chemistry (atoms, molecules,</p>

Feedback and Recommended Changes from the University Assessment Committee	Suggestions Implemented (Y/N)	Changes that Were or Will Be Implemented, or Rationale for Changes that Were Not Implemented
<p>understanding the cellular process on the one hand (outcome 1) and understanding the atom, compounds, etc. on the other hand (outcome 3). If the instrument measures overall learning in the course, fine; but it is not clear how it is also measuring specific areas of learning in the course, at least based on the way you are reporting the data.</p> <p>Only a single year's results are provided by the data, although previous year data were discussed in conclusions where appropriate. However, the missing data mentioned in outcome 2a, when considered alongside the miscommunication regarding the testing for the BS program, raises some questions about whether departmental communication and procedures are strong enough to guarantee consistent assessment.</p>	<p>Response</p>	<p>etc.) and units over cellular processes. The department presently does not have an efficient way to separate out each of these sections on the pre/post-test other than by going over each exam and analyzing each student and section of Gen. Cellular Biology. The department is considering the purchase of a new scanner that will enable us to analyze each section of the pre/post-test so that each section of the pre/post-test can be analyzed.</p>
<p>In cases where the same measure was used in past years, why wasn't multi-year data presented?</p>	<p>Response</p>	<p>We will try to include previous years in the next report, but believe at a certain point this just lengthens the report even further and with any possible changes that occur one year to another analysis is not always statistically reliable.</p>
<p>In part of the conclusion for 1a you state, "At that time students average about 24% higher on the post-term." This statement is unclear.</p>	<p>Response</p>	<p>See above</p>
<p>Results of 2b measures were considered acceptable, even though the standard was not quite met for the first unit test. That said, the trend was positive over the semester as well as between fall and spring. While no instruction changes may be needed, does the department have plans to do anything different regarding the learning measured by the first unit exam?</p>	<p>Response</p>	<p>We are not sure why this statement is unclear, when you compare the average score of all of the pre-test scores to the average of all the post-scores we found on average that all of the students improved by 24%.</p> <p>See conclusion part 4 2b.</p>
<p>The stated change is an excellent idea that could strengthen program assessment overall. Is it correct to assume, therefore, that in the past the AS-Biology assessments have conflated AS-Biology and BS-Biology majors?</p>	<p>Response</p>	<p>The department is working toward this goal of separating out the two degrees but coordination and consistency between full time faculty and part-time faculty has proven to be a challenge. Making sure all the Cellular biology courses, Botany, and Zoology keep track of declared majors and reporting such on pre/post-test and unit exams has proved to be difficult. For example, out of four sections of General Cellular</p>

Feedback and Recommended Changes from the University Assessment Committee	Suggestions Implemented (Y/N)	Changes that Were or Will Be Implemented, or Rationale for Changes that Were Not Implemented
		Biology (one in the Fall 2012 and one in the Spring 2013) 14 out of 156 students were declared as A.S. in Biology students. This is a comparative low number considering the total number of students enrolled in General Cellular Biology, but the department is making progress in separating out the A.S. and B.S. in biology students.
No, but the change listed in part 5 should become in all feasible situations the standard for the university.	?	?
Why are the unit exams considered indirect measures? Objective quizzes and exams are direct measures.	Y	We agree they should be considered direct measures and will indicated as such on the 2013-2014 report.

Analysis of Evidence of Degree Program Student Learning

- 4) For all degree program outcomes, describe the assessment measures and performance standards used, as well as the sampling methods and sample sizes. For each measure, document the results of the activity measured and draw any relevant conclusions related to student performance. Finally, indicate whether the performance standard was met or not. See Example #2 at the end of this form.

A. Degree Program Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)														
1. Demonstrate an understanding of General Cellular processes.	Comprehensive Pre-Post Exam Comprises a 50 multiple-choice question exam on basic concepts covered in the course. This exam was	70% of students will score 70% or above.	Administered to all students in General Cellular Biology (Biol. 1144) during both Fall and Spring terms. Pre-test was given in first class meeting	Fall 193 Spring 129	These tables summarize student scores for the fall and spring terms. <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Fall 2012 Score Distribution</th> </tr> </thead> <tbody> <tr> <td style="text-align: right;">0-49%</td> <td style="text-align: center;">14</td> </tr> <tr> <td style="text-align: right;">50-59%</td> <td style="text-align: center;">33</td> </tr> <tr> <td style="text-align: right;">60-69%</td> <td style="text-align: center;">41</td> </tr> <tr> <td style="text-align: right;">70-79%</td> <td style="text-align: center;">50</td> </tr> <tr> <td style="text-align: right;">80-89%</td> <td style="text-align: center;">34</td> </tr> <tr> <td style="text-align: right;">90-100%</td> <td style="text-align: center;">21</td> </tr> </tbody> </table>	Fall 2012 Score Distribution		0-49%	14	50-59%	33	60-69%	41	70-79%	50	80-89%	34	90-100%	21	Average test scores were 70% and 66% for the Fall and Spring terms. The average was 68% for both terms combined. 54% (105 of 193) of students scored $\geq 70\%$ for the Fall term. 39% (51 of 129) of students scored $\geq 70\%$ for the Spring term.	N
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	<p>administered as a pre-post test.</p> <p>We consider two results: 1) post test scores, and 2) the difference in pre-post test scores.</p> <p>Here, we discuss the post-test score results. Change in pre-post scores is discussed in next section.</p>		<p>Post-test was given at time of final exam</p>	<p>2a. 87 assessed</p>	<p>Average: 70.11</p> <p>Spring 2013 Score Distribution</p> <table border="1"> <tr><td>0-49%</td><td>20</td></tr> <tr><td>50-59%</td><td>31</td></tr> <tr><td>60-69%</td><td>27</td></tr> <tr><td>70-79%</td><td>22</td></tr> <tr><td>80-89%</td><td>17</td></tr> <tr><td>90-100%</td><td>12</td></tr> <tr><td>Average:</td><td>65.55</td></tr> </table>	0-49%	20	50-59%	31	60-69%	27	70-79%	22	80-89%	17	90-100%	12	Average:	65.55	<p>48% (156 of 322) of students scored $\geq 70\%$ for both terms combined.</p> <p>These results fall below the established standard. They are also consistent with the numbers seen in the last two cycles. In those years scores had averages of $\approx 68\%$ with 48% of students scoring at or above 70%.</p>	
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<p>2. Apply understanding of the taxonomy, morphology, and physiology of the Animal and Plant Kingdoms.</p>	<p>2a Unit exams that assess taxonomy, morphology, and physiology of plants.</p>	<p>2a. At least 70% of students in General Botany (BIOL 2104) will score 70% or better on all unit exams.</p>	<p>2a. Students in General Botany will be given unit exams pertaining to this objective and each of these unit exams will be analyzed by the faculty involved.</p>	<p>2a. 87 assessed</p>	<p>2a. During the Fall of 2012, 89% of the students scored 70% or better on all 5 unit exams. During the Spring of 2012 84% of the students scored 70% or better on the 6 unit exams provided.</p>	<p>2a Due to the academic rank of the students in the Fall and Spring semesters, the exam scores are above what normally would be expected. Both classes have a higher than normal senior class attendance. BIOL 112M students wait until graduating semester to take Botany, causing a higher than anticipated score.</p>	<p>N</p>														
<p>2b Unit exams that assess the understanding of taxonomy, morphology, and physiology of animals.</p>	<p>2b Unit exams that assess the understanding of taxonomy, morphology, and physiology of animals.</p>	<p>2b. At least 70% of students in General Zoology (BIOL 2205) will score 70% or better on all unit exams.</p>	<p>2b. Students General Zoology (BIOL 2205) will be given unit exams pertaining to this objective and each of</p>	<p>2b.98 assessed</p>	<p>2b. During the Fall of 2012, 70% of the students scored 70% or better on all 6 unit exams except for the first two exams. Unit 1, 61% scored > 70% and on unit 2, 61% scored > 70%. During the Spring 2013</p>	<p>2b. The first two unit exams have continued to be the most challenging units for the students for the past four years. To increase our outcomes for performance standard a "pretest" has been developed to</p>	<p>N</p>														

<p>3. Demonstrate an understanding of the atom, compounds, matter, gases, solutions, atomic theory, bonding chemical reactions, and chemical kinetics. The program outcome "chemical kinetics" Has been dropped as a program outcome.</p>	<p>The difference in pre and post test scores was calculated for each student. These values were used in this analysis</p>	<p>70% of students will improve on the post-test by 20% or greater over the pre-test</p>	<p>Administered to all students in General Cellular Biology (Biol. 1144) during both Fall and Spring terms</p> <p>Pre-test was given in first class meeting</p> <p>Post-test was given at time of final exam.</p>	<p>Fall 185</p> <p>Spring 125</p>	<p>semester, 70% of the students scored 70% or better on all unit exams except for the first two exams. Unit 1, 68% scored 70% or better and on Unit 2 63% scored > 70%. Unit 1 covers evolution and taxonomy and Unit 2 covers protozoans and sponges..</p>	<p>act as a study aid in preparation for these two unit exams. This should help prepare the student for the type of questions they are expected to answer and the detail in which they need to learn the information.</p>	<p>Y</p>																									
		<p>These tables summarize the difference in student scores for the pre & post test scores for each term.</p> <table border="1" data-bbox="649 735 1055 1008"> <thead> <tr> <th colspan="2">Fall 2012</th> </tr> <tr> <th>Score Distribution</th> <th>(Post Test Improvement)</th> </tr> </thead> <tbody> <tr> <td>0-10%</td> <td>11</td> </tr> <tr> <td>10-20%</td> <td>27</td> </tr> <tr> <td>20-30%</td> <td>42</td> </tr> <tr> <td>30-40%</td> <td>46</td> </tr> <tr> <td>40-50%</td> <td>29</td> </tr> <tr> <td>50-60%</td> <td>24</td> </tr> <tr> <td>60-70%</td> <td>5</td> </tr> <tr> <td>70-80%</td> <td>1</td> </tr> <tr> <td>80-90%</td> <td>0</td> </tr> <tr> <td>90-100%</td> <td>0</td> </tr> <tr> <td>Average gain:</td> <td>31.62%</td> </tr> </tbody> </table>	Fall 2012		Score Distribution	(Post Test Improvement)	0-10%	11	10-20%	27	20-30%	42	30-40%	46	40-50%	29	50-60%	24	60-70%	5	70-80%	1	80-90%	0	90-100%	0	Average gain:	31.62%	<p>Student scores on the post-test improved by an average of 32% and 26% for the Fall and Spring terms. The average was 29% for both terms combined.</p> <p>80% (147 of 185) of students improved their score by $\geq 20\%$ for the Fall term.</p> <p>68% (85 of 125) of students improved their score by $\geq 20\%$ for the Spring term.</p> <p>75% (232 of 310) of students improved their score by $\geq 20\%$ for the both terms combined.</p> <p>Our standard exceeded in Fall 2012 term, but fell just short in Spring 2013. When numbers are combined for both terms, however, we met and exceeded the desired goal.</p> <p>A comparison with the last two academic years shows an encouraging upward trend. Below are the average amount of improvement and the percentage of students meeting</p>			
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						<p>the minimum for the last three cycles.</p> <p>2010-11 24% 65%</p> <p>2011-12 27% 68%</p> <p>2012-13 29% 75%</p> <p>As the post-test scores have been stable, this can only be explained by the doing more poorly on their pre-test scores. This suggests students entering college-level study are less prepared than previously.</p>																					
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4. Demonstrate knowledge about the components and requirements of a safe lab environment.	A revised lab section over lab safety has been added to Gen Biol. 1144	100% of the students will participate and pass the practical safety exercise. This will be a pass/fail exercise.	All students in majors biology course (Bio. 1144L) will be sampled in Fall 2013/Spring 2014			No data was collected for Fall 2012 or Spring 2013 because an updated outcome has been developed to replace the old outcome.																					

5) State any proposed instructional or assessment changes to be implemented for the next academic year. They should be based on conclusions reported in Section 4 (above) or on informal activities, such as faculty meetings and discussions, conferences, pilot projects, textbook adoption, new course proposals, curriculum modifications, etc. Explain the rationale for these changes and how they will impact student learning and other considerations, such as curriculum, degree plan, assessment process, or budget. If no changes are planned, simply state "No changes are planned." [See EXAMPLE #1 at the end of this form.]

Degree Program Outcomes	Instructional or Assessment Changes	Rationale for Changes	Impact of Planned Changes on Student Learning and Other Considerations.
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<p>1. Demonstrate an understanding of General Cellular processes and</p> <p>3. Demonstrate an understanding of the atom, compounds, matter, gases, solutions, atomic theory, bonding chemical reactions, and chemical kinetics.</p> <p>The program outcome "chemical kinetics" Has been dropped as a program outcome</p>	<p>The biology faculty has reviewed the questions and expanded the pre/post test from 40 to 50 questions for 2013-2014</p>	<p>Some questions were ambiguous and needed clarification and the increase in questions better represented the outcome.</p>	
<p>2. Apply understanding of the taxonomy, morphology, and physiology of the Animal and Plant Kingdoms</p>	<p>To increase our outcomes for taxonomy, morphology, and physiology performance standard a "pretest" has been developed to act as a study aid in preparation for these two unit exams. This should help prepare the student for the type of questions they are expected to answer</p>	<p>This may increase the first two exam score outcomes to meet the standard.</p>	
<p>All</p> <p>4. Demonstrate knowledge about the components and requirements of a safe lab environment</p>	<p>AS Biology majors will be identified in all General Cellular Biology (BIOL 1144), General Botany (BIOL 2104), and General Zoology (BIOL 2205) and used for assessment of student learning. This change will occur after 30 or more hours are obtained due to the majority of students declaring the A. S. degree during their sophomore or junior semesters.</p> <p>A new lab section over lab safety has been added to Gen Biol. 1114, 100% of the students will participate and pass the practical safety exercise. This will be a pass/fail exercise.</p>	<p>This change will allow the department to accurately tease out pertinent data to analyze and determine student learning of program majors.</p> <p>This is a better representative of an outcome.</p>	

- 6) In order to benefit the broader university community, please describe one or more practices the department believes has potential for pedagogical benefit. This is similar to what is known as a "best practice," which is a strategy, method or technology that in the professor's or department's experience improves classroom instruction and student learning. There should be preliminary reason to believe the practice can be replicated and generalized to other faculty and educational settings. Please include a department contact person, a brief description, and its potential or demonstrated educational impact. If there are none to report, put "none" in the Best Practice column.

Best Practice	Contact Person	Description	Educational Impact
None			

7) Assessment Measures:

- A. How many different assessment measures were used? 3



- B. List the direct measures (see rubric): 3

Pretest and post-test in Cellular Biology (BIOL 1144)
 Unit exam scores in General Botany (BIOL 2104)
 Unit exam scores in General Zoology (BIOL 2205)

- C. List the indirect measures (see rubric): 0

Documentation of Faculty Assessment

- 8) A. How many full time faculty (regardless of department affiliation) teach in the program? 8 biology faculty
 B. Provide the names and signatures of all faculty members who contributed to this report and indicate their respective roles:

Faculty Members	Roles in the Assessment Process (e.g., collect data, analyze data, prepare report, review report, etc.)	Signatures
Dr. Jerry Bowen	collected data, prepared report, reviewed report	 07 Nov 2013
Mrs. Claudia Glass	collected data, analyzed data, prepared report,	

Mr. Don Glass	and reviewed report	<i>Don Glass</i>
Dr. Sue Katz	collected data, analyzed data, prepared report, and reviewed report	<i>Sue Katz</i>
Dr. Adele Register	collected data	<i>Adele Register</i>
Dr. Craig Zimmerman	collected data	<i>Craig Zimmerman</i>
Dr. Eric Lee	collected data, analyzed data	<i>Eric Lee</i>
Dr. Jin Seo	Reviewed report	<i>Jin Seo</i>
	Reviewed report	<i>Jin Seo</i>

9) Reviewed by:

Titles	Names	Signatures	Date
Department Head	Dr. Jerry Bowen	<i>Jerry Bowen</i>	<i>07 Nov 2013</i>
Dean	Dr. Keith Martin	<i>Keith W. Martin</i>	<i>11/5/2013</i>