

Degree Program Student Learning Report (rev. 7/14)

Fall 2013 – Spring 2014

The Department of Biology in the School of Mathematics, Science & Health Sciences

Biological Sciences, A.S.

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

- 1) Valid student learning outcomes should be clearly articulated;
- 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 there should be evidence that instructional or assessment changes are being implemented to improve student learning.

**PART 1 (A & B)**

**Relationship of Degree Program Learning Outcomes to Departmental and University Missions**

**A.** Clearly state the school, department and degree program missions.

<b>University Mission</b>	<b>School Mission</b>	<b>Department Mission</b>	<b>Degree Program Mission</b>
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	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.

University Mission	School Mission	Department Mission	Degree Program Mission
	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.		

B. Clearly state school purposes, department purposes and degree program student learning outcomes. Align student learning outcomes with their appropriate school and department purposes, and these outcomes and purposes with their appropriate university commitments.

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
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.	The <b>Curriculum</b> 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	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	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.
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.	The School promotes a challenging, positive, and inquisitive Collegial environment of high ethical standards and of frequent interactions between faculty and students to foster independent thought and the collegial exchange of ideas	Demonstrate knowledge about the components and requirements of a safe lab environment  To promote a positive learning environment in our classrooms and on campus.	4. Demonstrate knowledge about the components and requirements of a safe lab environment.

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
To provide a general liberal arts education that supports specialized academic program and prepares students for lifelong learning and service in a diverse society.	The School recognizes the importance of scientific literacy in general education and its contribution to the liberal studies curriculum of the university.	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.	
To provide students with a diverse, innovative faculty dedicated to excellence in teaching, scholarly pursuits and 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.	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.	To increase the student's awareness of the benefits of incorporation of technology into science studies.  To serve as a resource for the community; utilizing the expertise of the faculty.	

## PART 2

### Discussion of Instructional Changes Resulting from 2012-2013 Degree Program Student Learning Report

List and discuss all instructional or assessment changes proposed in Part 5 of 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."

Instructional or Assessment Changes	Changes Implemented (Y/N)	Impact of Changes on Degree Program Curriculum or Budget
Outcomes 1 and 3: The biology faculty has reviewed the questions and expanded the pre/posttest from 40 to 50 questions, to better assess outcomes number 1 and 2	Y	No impact on curriculum or budget. The longer exam will reduce the penalty for a wrong answer. We hope these changes will result in improved student scores.
Outcome 2 To increase our outcomes for taxonomy, morphology, and physiology of animal performance standards a pretest has been developed to act as a study aid in preparation for the first two unit exams. This should help prepare the student for the type of questions they are expected to answer..	Y	No impact on curriculum or budget. The pretest was implemented and resulted in improved grades for Unit Exams 1 and 2.
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.	Y/N	This change was accomplished in Biol. 2104 (Botany) and Biol. 2205 (Zoology) but is still be "worked out" for Biol. 1144 (Gen. Cellular Biology)
Outcome 4: A new lab section over lab safety has been added for Gen. Cellular Biology (Biol. 1144). 100% of the students will participate and pass the practical safety exercise. This will be a pass/fail exercise.	Y	A new lab section was added to Biol. 1144 over safety protocols and safety equipment was added in the form of worksheet that was graded and all students had to pass. If the student did not pass the worksheet then they were required to redo the worksheet until they passed. The worksheet involves questions over the biology lab safety protocols as well as learning proper use of safety equipment.

PART 3

Discussion About the University Assessment Committee's 2012-2013 Peer Review Report

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
<p>Part 3: Difficult to determine whether last year's instructional or assessment changes were incorporated because some of the conclusions reported in section 4 (2011-2012 SLR) did not address steps that will be taken to improve performance. E.g.: Outcome 1, Bio 1144 fell below the established standard yet no steps taken to improve the standard. Also, instruction change addressed in section 5 of last year's report i.e., "AS Biology Majors will be identified in all...and used for assessment of student learning" not incorporated in section 4 of the 2012-2013 SLR</p>	<p>Y</p>	<p>1. All full-time faculty, as well as several adjunct instructors, share the responsibility of teaching the General Cell Biology course. The low performance of our students on the Pre-Post exam in this course is seen across instructors, all who use different styles and pedagogical methods. It is not an issue with the method or quality of instruction at this university. Rather, it is the opinion of the faculty that the poor showing of RSU students reflects the lower overall aptitude of our incoming students and lack of strong science standards at the secondary education level. Students who have gone through all 12 years of their primary and secondary education under the No Child Left Behind program seem to have even lower quantitative and scientific aptitude. Our faculty believes strongly that a sound understanding of science plays a central role to a liberal education and there is no desire to reduce rigor in these courses to improve scores. That being said there is a growing interest among more faculty to incorporate the Mastering Biology online activities into their course curriculum. This is discussed in Part 5.</p>

<p>Part 3: Did not address the following peer review feedback:</p> <ul style="list-style-type: none"> <li>Peer Review Report Question 4b (Page 6, paragraph one of your SLR): "Why can't a test or part of a test serve to evaluate what students know about good laboratory practices..."</li> <li>Peer Review Report Question 6 (page 8 of SLR): "...change listed in part 5 should become in all feasible situations, <u>the standard for the University</u>." This recommendation from UAC committee relates to a proposed assessment change (page 10 of SLR) regarding the need to identify AS Biology majors to "...allow the department to accurately tease out pertinent data to analyze and determine student learning of majors." This ought to be included under the best practice section (6)</li> <li>Peer Review Report question 4b (p.2) suggested restating assessment measure to read "Unit exams that assess understanding of Taxonomy, Morphology, and Physiology of animals." The phrase "understanding" not incorporated in 2a (p.9 of SLR).</li> </ul>	<p>Y</p> <p>Y</p> <p>Y</p>	<p>In addition to the lab safety worksheet, the possibility of also using a quiz/exam to measure laboratory safety (good laboratory practices) is being considered by the biology department.</p> <p>The AS in Biology students are now being identified and assessed in Biol. 2104 and Biol. 2205 and we are still working on assessing only AS in Biology students in Biol. 1144.</p> <p>This was an oversight and the recommended change has been implemented.</p>
<p>Part 4A: Outcome 4 page 11 of SLR: ("A revised lab section over lab safety has been added to Gen Biol. 1144"). Not clear what type of measure will be used. Will it be direct (multiple choice, essay exam, written report, etc.?) or in-direct (survey, etc.)?</p>	<p>Y</p>	<p>This outcome has been rewritten to better explain the assessment measures being implemented.</p>
<p>Part 4B: Page 9 of SLR: A score distribution of 2a and 2b results would be helpful to see the number of those who did not meet the 70% threshold.</p> <p>Page 11 of SLR: Since no data was collected for the new outcome (4) during the fall 2012 and spring 2013 period, any plans to report this data in the next SLR?</p>	<p>Y</p> <p>Y</p>	<p>Distribution scores for those students that are declared AS Biology majors for Botany and Zoology on unit exams are now being reported.</p> <p>Yes this data was collected and will be reported in the next SLR</p>
<p>Part 4E: Page 9 of SLR: Sampling method unclear did not indicate whether <u>all</u> students in General Biology (2a) or General Zoology (2b) were measured.</p>	<p>Y</p>	<p>All students in Cell Biology (Biol. 1144), Zoology (Biol. 2205), and Botany (Biol. 2104) were measured but only those that are declared majors in the Associate Degree in Biology are being reported for Biol. 2205 and Biol. 2104. We are still in the process of</p>

		coordinating the "teasing out" of AS Biology majors in Cell Biology (Biol. 1144). Because so many different faculty teach Biol. 1144 (and the professors vary from one semester to another) it has proven difficult get an accurate count in the numbers of AS Biology students that are currently in Biol. 1144 (for example not all faculty are keeping track of their student's majors in Biol. 1144 since this course is required of all biology and nursing majors).
Part 4F: Outcomes 2a and 2b fell short of providing a clear and meaningful overview of results. Distribution data would helpful.	Y	See above
Part 4G: The following outcomes did not address any steps that the instructors plan to take to improve student performance: <ul style="list-style-type: none"> <li>Pages 9-11: Outcome 1, 2a, and 3.</li> </ul>	Y	Outcome 1 is currently assessing ALL students in Biol. 1144, which includes BS biology majors and nursing students, not just those declaring AS Biology major. We are currently still trying to coordinate the reporting of the pre and post-test so that we can just assess the AS Biology majors. Several faculty teach this course which has been a challenge to get the faculty involved to report their results for all students and those declaring the AS Biology major (the faculty teaching this course also varies from semester to semester). Because such a large variety of faculty teach this course agreeing to specific instructional changes without affecting class autonomy is difficult. Outcome 2a results from last year meet our goals so no new instructional changes were planned and none were needed. Outcome 3 had no results (for 2012-2013) so no changes could be suggested other than to improve the communication and the collection of data for those full time faculty and adjuncts involved. Data for outcome 3 is being reported on the Fall13-Spring14 SLO.
Part 4H: Yes		
Part 5: Outcome 2b is the only outcome that provides a rationale for making instructional changes (p. 9-10: "to increase our outcomes performance standard, a pretest has been developed to act as a study aid in preparation for these two unit exams...."	Y	The pretest was developed and given to the zoology students and improvements were seen on the first two unit exams in zoology (outcome 2b) for Fall 2013 and Spring 2014. This change will continue next year with hopefully continued success. No new instructional changes are planned.
Part 6: No		
Part 8: It would be helpful if you identified courses that the faculty collected and analyzed data for.	Y	This information has been added for 2013-2014.

PART 4

Analysis of Evidence of Student Learning Outcomes

For all student learning outcomes (as listed in Part 1 B above), 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 relevant conclusions related to strengths and weaknesses of their performance.

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)																																													
1. Demonstrate an understanding of general cellular processes.	<p>Comprehensive Pre-Post Exam</p> <p>Comprises a 50 multiple-choice question exam on basic concepts covered in the course.</p> <p>This exam was 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>	70% of students will score 70% or above.	<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 128</p> <p>Spring 118</p>	<p>These tables summarize student scores for the fall and spring terms.</p> <p style="text-align: center;"><b>Fall</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Score Distribution</th> </tr> </thead> <tbody> <tr><td>0-49%</td><td style="text-align: right;">26</td></tr> <tr><td>50-59%</td><td style="text-align: right;">29</td></tr> <tr><td>60-69%</td><td style="text-align: right;">26</td></tr> <tr><td colspan="2" style="text-align: center;">-----</td></tr> <tr><td>70-79%</td><td style="text-align: right;">13</td></tr> <tr><td>80-89%</td><td style="text-align: right;">22</td></tr> <tr><td>90-100%</td><td style="text-align: right;">12</td></tr> <tr><td><b>Average:</b></td><td style="text-align: right;">64.9</td></tr> </tbody> </table> <p style="text-align: center;"><b>Spring</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Score Distribution</th> </tr> </thead> <tbody> <tr><td>0-49%</td><td style="text-align: right;">33</td></tr> <tr><td>50-59%</td><td style="text-align: right;">20</td></tr> <tr><td>60-69%</td><td style="text-align: right;">20</td></tr> <tr><td colspan="2" style="text-align: center;">-----</td></tr> <tr><td>70-79%</td><td style="text-align: right;">32</td></tr> <tr><td>80-89%</td><td style="text-align: right;">7</td></tr> <tr><td>90-100%</td><td style="text-align: right;">6</td></tr> <tr><td><b>Average:</b></td><td style="text-align: right;">61.7</td></tr> </tbody> </table>	Score Distribution		0-49%	26	50-59%	29	60-69%	26	-----		70-79%	13	80-89%	22	90-100%	12	<b>Average:</b>	64.9	Score Distribution		0-49%	33	50-59%	20	60-69%	20	-----		70-79%	32	80-89%	7	90-100%	6	<b>Average:</b>	61.7	<p>Mean scores were 65% and 62% for Fall &amp; Spring terms. The overall mean score for the both terms was a 63%. Only 37% of students met that standard of 70%.</p> <p>This is a drop from the previous year, but is still an improvement over the 2011-12 cycle.</p> <p>Below is the average amount of improvement and the percentage of students making a 70% or higher for the last three cycles.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr><td>2013-14</td><td style="text-align: center;">63.3</td><td style="text-align: center;">37%</td></tr> <tr><td>2012-13</td><td style="text-align: center;">66.0</td><td style="text-align: center;">44%</td></tr> <tr><td>2011-12</td><td style="text-align: center;">60.0</td><td style="text-align: center;">29%</td></tr> </tbody> </table> <p>We have yet to meet our goals for this measurement but feel that the diversity of students in Biol. 1144 is one of the reasons. This course, besides biology</p>	2013-14	63.3	37%	2012-13	66.0	44%	2011-12	60.0	29%	N
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						<p>majors, includes many nursing majors which often times are not traditional students. BIOL 1144 also consist of many returning students that have not been in school for a while. We are strongly encouraging these students to seek tutoring (both from the tutoring lab &amp; from tutor.com) and are hopeful this will improve the scores.</p> <p>In the next SLO we are going to assess only the AS Biology majors in Biol. 1144 which may also affect the outcome or our assessment. If we compare the performance from Biol. 1144 which is a requirement for Biol. 2104 and Biol. 2205 we find those AS Biology in both Biol. 2104 and Biol. 2205 are meeting the our goals in the sophomore level courses.</p>	
2. Apply understanding of the taxonomy, morphology, and physiology of the Animal and Plant Kingdoms.	2a Unit exams that assess the understanding of taxonomy, morphology, and physiology of plants.	2a. At least 70% of students in General Botany (BIOL 2104) will score 70% or better on all units exams.	2a. All 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	2a. 82 assessed	2a. During the Fall of 2013, 59% of the AS students scored 70% or better on all 4 unit exams. During the Spring of 2014 65% of the AS students scored 70% or better on the 4 unit exams provided.  During the Fall of 2013 Botany	2a Our desired standard was not met in this cycle and showed a sharp drop in the fraction of students scoring 70% or higher because the students assessed were only AS students.  When comparing Exam 1, Fall 2013 the overall class 80% of the students scored 70% or	N

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)																														
			involved.		<p>had only 4 students out 50 students were AS Biology majors. The following Table summarizes the Fall 13 results</p> <p style="text-align: center;">FALL 2013 SCORE DISTRIBUTIONS</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Exam</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>100-90% =</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>89-80% =</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>79-70% =</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>69-60% =</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>0-59% =</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p><u>Percent of students making 70% or better on Unit Exams</u> Exam 1 = 50% Exam 2 = 67% Exam 3 = 67% Exam 4 = 50%</p> <p>During the Fall 2013 59% of AS students made 70% or better on all the unit exams. Also note Two students withdrew.</p> <p>During the Spring of 2014, Zoology had only 4 students out of 32 students were AS Biology majors. The following Table summarizes the Spring 14 results.</p> <p style="text-align: center;">SPRING 2014 SCORE DISTRIBUTION</p>	Exam	1	2	3	4	100-90% =	0	1	1	1	89-80% =	1	1	1	1	79-70% =	1	0	0	1	69-60% =	1	1	0	0	0-59% =	1	0	1	1	<p>better whereas 50% of the AS students scored 70% or higher. Exam 2, Fall 2013 the overall class 64% of the students scored 70% or better whereas 67% of the AS students scored 70% or higher. Exam 3, Fall 2013 the overall class 70% of the students scored 70% or better whereas 67% of the AS students scored 70% or higher. Exam 4, Fall 2013 the overall class 68% of the students scored 70% or better whereas 50% of the AS students scored 70% or higher. For the Spring of 2014, Exam one the overall class 97% of the students scored 70% or better whereas 67% of the AS students scored 70% or higher. Exam 2, Spring 2014 the overall class 91% of the students scored 70% or better whereas 50% of the AS students scored 70% or higher. Exam 3, Spring 2014 the overall class 84% of the students scored 70% or better whereas 75% of the AS students scored 70% or higher. Exam 4, Spring 2014 the overall class 81% of the students scored 70% or better whereas</p>	
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	2b Unit exams that assess the understanding of taxonomy, morphology, and physiology of animals.	2b. At least 70% of students in General Zoology (BIOL 2205) will score 70% or better on all unit exams.	2b. All students General Zoology (BIOL 2205) will be given unit exams pertaining to this objective and each of these unit exams will be analyzed by the faculty involved. Only	2b.98 assessed	<p>Exam      1 2 3 4</p> <p>100-90% = 0 0 1 1</p> <p>89-80% = 1 2 2 1</p> <p>79-70% = 1 0 0 0</p> <p>69-60% = 0 2 0 0</p> <p>0 -59% = 1 0 1 1</p> <p><u>Percent of students making 70% or better on Unit Exams</u></p> <p>Exam 1 = 67%</p> <p>Exam 2 = 50%</p> <p>Exam 3 = 75%</p> <p>Exam 4 = 67%</p> <p>During the Spring 2014 65% of AS students made 70% or better on all the unit exams. Also note one of the AS students quit attending after the second exam and the other student missed an exam.</p> <p>2b. During the Fall of 2013 Zoology had only 4 students out 35 students were AS Biology majors. The following Table summarizes the Fall 13 results.</p> <p style="text-align: center;">FALL 2013 SCORE DISTRIBUTIONS</p> <p>Exam      1 2 3 4 5 6</p> <p>100-90% = 0 2 1 1 0 1</p> <p>89-80% = 2 1 0 1 1 1</p>	<p>67% of the AS students scored 70% or higher.</p> <p>To improve student success and understanding a greater emphasis will be given to difficult materials.</p> <p>More frequent testing will be implemented to reduce material per exam so students will have more time to prepare and ask for additional explanation of concepts.</p> <p>2b. These results when compared to last year indicate an improvement. During the Fall of 2012, students fell below the 70% standard on two of the unit exams (Unit 1, 61% scored &gt; 70% and on unit 2, 61% scored &gt; 70%). During the Spring 2013 students fell below the 70% standard on two of the unit exams (Unit 1, 68% scored</p>	Y

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			the declared AS in Biology students will be reported.		<p>79-70% = 1 0 0 0 1 0  69-60% = 1 0 0 0 0 0  0- 59% = 0 1 1 0 0 0</p> <p><u>Percent of students making 70% or better on Unit Exams</u>  Exam 1 = 75%  Exam 2 = 75%  Exam 3 = 50%  Exam 4 = 100%  Exam 5 = 100%  Exam 6 = 100%</p> <p>During the Fall 2013 70% of AS students made 70% or better on all the unit exams except for Exam 3 (50%). Also note two of the AS students withdrew after the second exam.</p> <p>During the Spring of 2014, Zoology had only 7 students out of 30 students were AS Biology majors. The following Table summarizes the Spring 14 results.</p> <p style="text-align: center;">SPRING 2014 SCORE DISTRIBUTION</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Exam</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>100-90% =</td> <td>1</td> <td>2</td> <td>0</td> <td>1</td> <td>6</td> <td>1</td> </tr> <tr> <td>89-80% =</td> <td>4</td> <td>1</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> <tr> <td>79-70% =</td> <td>1</td> <td>3</td> <td>2</td> <td>3</td> <td>0</td> <td>4</td> </tr> <tr> <td>69-60% =</td> <td>1</td> <td>1</td> <td>2</td> <td>0</td> <td>0</td> <td>2</td> </tr> <tr> <td>0 -59% =</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> </table>	Exam	1	2	3	4	5	6	100-90% =	1	2	0	1	6	1	89-80% =	4	1	3	2	1	0	79-70% =	1	3	2	3	0	4	69-60% =	1	1	2	0	0	2	0 -59% =	0	0	0	1	0	0	<p>70% or better and on Unit 2 (63% scored &gt; 70%). The implementation of the pretest appears to have improved overall performance on Unit exams 1 and 2 compared to previous 4 years. This year only one unit exam fell below the 70% standard (Fall 2013, Unit exam 3 only had 50% of the students making 70% or better). The primary reason for this lower score is that only two A.S. biology majors were assessed. Because this is such a low number of students assessed it is believed that this is not a statistically significant number to warrant any instructional changes. No new instructional changes are planned.</p>	
Exam	1	2	3	4	5	6																																											
100-90% =	1	2	0	1	6	1																																											
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					<p>Percent of students making 70% or better on Unit Exams</p> <p>Exam 1 = 100% Exam 2 = 86% Exam 3 = 71% Exam 4 = 86% Exam 5 = 100% Exam 6 = 71%</p> <p>During the Spring of 2014 70% of AS students made 70% or better on all six unit exams.</p>																								
3. Demonstrate an understanding of the atom, compounds, matter, gases, solutions, atomic theory, bonding chemical reactions, and chemical kinetics.	The difference in pre and post test scores was calculated for each student. These values were used in this analysis	70% of students will improve on the post-test by 20% or greater over the pre-test	<p>Given to all students in both Fall and Spring terms.</p> <p>Conducted as pre-post test.</p> <p>Pre-test was given in first class meeting</p> <p>Post-test was given at time of final exam.</p>	<p>Fall 167</p> <p>Spring 150</p>	<p>These tables summarize the difference in student scores for the pre &amp; post test scores for each term.</p> <p style="text-align: center;"><b>Fall</b></p> <p style="text-align: center;"><b>Score Distribution</b> (Post Test Improvement)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>0-10%</td><td style="text-align: right;">23</td></tr> <tr><td>10-20%</td><td style="text-align: right;">37</td></tr> <tr><td>20-30%</td><td style="text-align: right;">35</td></tr> <tr><td>30-40%</td><td style="text-align: right;">35</td></tr> <tr><td>40-50%</td><td style="text-align: right;">19</td></tr> <tr><td>50-60%</td><td style="text-align: right;">9</td></tr> <tr><td>60-70%</td><td style="text-align: right;">4</td></tr> <tr><td>70-80%</td><td style="text-align: right;">0</td></tr> <tr><td>80-90%</td><td style="text-align: right;">2</td></tr> <tr><td>90-100%</td><td style="text-align: right;">1</td></tr> <tr><td><b>Average gain:</b></td><td style="text-align: right;"><b>27.11</b></td></tr> </table>	0-10%	23	10-20%	37	20-30%	35	30-40%	35	40-50%	19	50-60%	9	60-70%	4	70-80%	0	80-90%	2	90-100%	1	<b>Average gain:</b>	<b>27.11</b>	<p>Student scores on the post-test improved by an average of 27% and 23% for the Fall and Spring terms. The average was 25% for both terms combined.</p> <p>63% (105 of 167) of students improved their score by <math>\geq 20\%</math> for the Fall term.</p> <p>55% 83 of 150) of students improved their score by <math>\geq 20\%</math> for the Spring term.</p> <p>59% (188 of 317) of students improved their score by <math>\geq 20\%</math> for the both terms combined.</p> <p>Our desired standard was not met in this cycle and showed a</p>	Y
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					<p style="text-align: center;">Spring Score Distribution (Post Test Improvement)</p> <table border="0" style="width: 100%;"> <tr><td>0-10%</td><td style="text-align: right;">20</td></tr> <tr><td>10-20%</td><td style="text-align: right;">41</td></tr> <tr><td>20-30%</td><td style="text-align: right;">40</td></tr> <tr><td>30-40%</td><td style="text-align: right;">28</td></tr> <tr><td>40-50%</td><td style="text-align: right;">7</td></tr> <tr><td>50-60%</td><td style="text-align: right;">5</td></tr> <tr><td>60-70%</td><td style="text-align: right;">2</td></tr> <tr><td>70-80%</td><td style="text-align: right;">1</td></tr> <tr><td>80-90%</td><td style="text-align: right;">0</td></tr> <tr><td>90-100%</td><td style="text-align: right;">0</td></tr> <tr><td>Average gain:</td><td style="text-align: right;">22.65</td></tr> </table>	0-10%	20	10-20%	41	20-30%	40	30-40%	28	40-50%	7	50-60%	5	60-70%	2	70-80%	1	80-90%	0	90-100%	0	Average gain:	22.65	<p>sharp drop in the fraction of students scoring 70% or higher. This has reversed of trend of improving numbers seen over the last four years. The reason for this drop is not clear. Below are the average amount of improvement and the percentage of students meeting the standard for the last three cycles.</p> <table border="0" style="width: 100%;"> <tr><td>2013-14</td><td>25%</td><td>59%</td></tr> <tr><td>2012-13</td><td>29%</td><td>75%</td></tr> <tr><td>2011-12</td><td>27%</td><td>68%</td></tr> <tr><td>2010-11</td><td>24%</td><td>65%</td></tr> </table> <p>As discussed above, the students in this course routinely fail to meet the established performance standard. Progress towards this measure, however, is always better than the previous measure in that many students show substantial progress toward improving their understanding of biology over the course of the semester. Roughly 25% of incoming students score below 30% on the pre-test. A total of 57% score below a 40%. The numbers below show the level of improvement students make as related to their pre-test</p>	2013-14	25%	59%	2012-13	29%	75%	2011-12	27%	68%	2010-11	24%	65%	
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						<p>scores. Students that perform the poorest on the pre-test are showing the greatest improvement. Notably, students scoring &lt; 20% on the pre-test are increasing their final score by almost 30 percentage points.</p> <p>&lt;20% 30.0  20-30% 24.6  30-40% 25.2  40-50% 22.6  50-60% 17.8  60-70% 19.3  &gt;70% 14.0</p>	
4. Demonstrate knowledge about the components and requirements of a safe lab environment.	A laboratory exercise and worksheet will be administered to all students in Biol. 1144.	100% of the students in Biol. 1144L will complete and pass the worksheet over laboratory safety. This exercise requires students to learn biology laboratory protocols and safety equipment and its proper use and function. This will be a	All students in majors biology course (Bio. 1144L) were sampled during the Fall 2013 and Spring 2014	418	Out of the 418 students only 20 were required to repeat the exercise upon which they received a passing grade.	Although our goal was achieved and students are learning proper laboratory safety, the coordination and implementation of this process has proved challenging because of the number of adjuncts teaching the labs. To improve implementation, we are in the process of hiring a laboratory coordinator and are planning on revising this exercise to include a written quiz over laboratory safety. This laboratory coordinator will develop this quiz and oversee that both the exercise and quiz are properly administered to all students and the results are	Y

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
		pass/fail exercise. Any student not passing the exercise will be required to repeat the exercise until they can pass.				given to the Head of the Biology Department.	

**PART 5**

**Proposed Instructional Changes Based on Conclusions Drawn from Evidence Presented Above**

State any proposed instructional or assessment changes to be implemented for the next academic year. They should be based on conclusions reported in Part 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."

Student Learning Outcomes	Instructional or Assessment Changes	Rationale for Changes	Impact of Planned Changes on Student Learning and Other Considerations.
Outcomes 1 & 3	<p>The AS Biology students will be "teased out" from the other majors in Gen. Cellular Biology (Biol. 1144)</p> <p>Biol. 1144: General Cell Biology Encourage more instructors to adopt the Mastering Biology online learning system.</p>	<p>This change will allow the department to accurately tease out pertinent data that applies to only the AS Biology students.</p> <p>This platform is an online supplement to the text book used in the course that uses a variety of pedagogical methods for teaching biological concepts. Instructors currently using the system have reported</p>	<p>More time will be required from faculty teaching Biol. 1144 to "tease out" this information. No other impact is expected.</p> <p>A greater utilization of this resource might improve student progress toward the established learning outcomes.</p>



Student Learning Outcomes	Instructional or Assessment Changes	Rationale for Changes	Impact of Planned Changes on Student Learning and Other Considerations.
		an increase in student understanding.	
Outcome 2A	Biol. 2104 To improve student success and understanding a greater emphasis will be given to difficult materials. More frequent testing will be implemented to reduce material per exam so students will have more time to prepare and ask for additional explanation of concepts.	To continue to improve scores on outcome 2a.	None
Outcome 4	We are hiring a lab coordinator for Biol. 1144.	To improve implementation, we are in the process of hiring a laboratory coordinator and are planning on revising this exercise to include a written quiz over laboratory safety. This laboratory coordinator will develop this quiz and oversee that both the exercise and quiz are properly administered to all students and the results are given to the Head of the Biology Department.	No impact on budget, this position was previously requisitioned.

**PART 6**

**Shared Pedagogical Insight that Improves Student Learning or Classroom Engagement**

(OPTIONAL) If your department or a faculty member has developed a method or technique of teaching that seems especially effective in improving student learning or student engagement in the classroom, please provide a brief description below. More detail can be communicated during the face to face peer review session.

Description
None

**PART 7 (A & B)**

**Assessment Measures and Faculty Participation**

**A. Assessment Measures:**

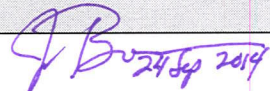



- 1) How many different assessment measures were used? 5
- 2) List the direct measures (see rubric):

Pretest and post-test in Cellular Biology (BIOL 1144) – Post scores  
 Pretest and post-test in Cellular Biology (BIOL 1144) – Change in Pre and Post scores  
 Unit exam scores in General Botany (BIOL 2104)  
 Unit exam scores in General Zoology (BIOL 2205)  
 Lab safety worksheet in Cell Biology (BIOL 1144)

- 3) List the indirect measures (see rubric): 0

**B.**

- 1) 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 for Biol. 1144, reviewed report	
Mrs. Claudia Glass	Collected data for Biol. 1144, and Biol.2104, analyzed data, prepared report, and reviewed report	
Mr. Don Glass	Collected data for Biol. 1144 and Biol. 2205 analyzed data, prepared report, and reviewed report	
Dr. Sue Katz <i>Amburn</i>	Reviewed report	

Dr. Adele Register	Collected data for Biol. 1144, reviewed report	Adele Register
Dr. Craig Zimmerman	Collected data for Biol. 1144, analyzed data	Craig Zimmerman
Dr. Eric Lee	Collected data for Biol. 1144, reviewed report	E. Lee
Dr. Jin Seo	Collected data for Biol. 1144, reviewed report	Jin Seo
Mrs. Emily Shelton	Collected date for Biol. 1144	Emily Shelton

2) Reviewed by:

Titles	Names	Signatures	Date
Department Head	Dr. Jerry Bowen	Jerry Bowen	24 Sep 2014
Dean	Dr. Keith Martin	Keith W. Martin	9/25/2014