

# Degree Program Student Learning Report

Revised August 2017

## Department of Biology

### **AS in Biological Sciences**

For 2017-2018 Academic Year

#### **PART 1**

##### **Degree Program Mission and Student Learning Outcomes**

**A.** 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. 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.** Align school purposes, department purposes, and program student learning outcomes with their appropriate University commitments.

<b>University Commitments</b>	<b>School Purposes</b>	<b>Department Purposes</b>	<b>Student Learning Outcomes</b>
To provide quality associate, baccalaureate, and graduate degree	The School offers innovative degrees, which focus upon	To increase the student's critical thinking and reasoning abilities.	1. Demonstrate an understanding of general cellular processes.

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
opportunities and educational experiences which foster student excellence in oral and written communications, scientific reasoning and critical and creative thinking.	developing skills in oral and written communication, critical thinking, creativity, empirical and evidenced-based inquiry, experimental investigation and theoretical explanation of natural phenomena, and innovative technology.	To prepare a student to matriculate into a four-year degree program in math or science related fields or graduate	<p>2. Apply understanding of the taxonomy, morphology, and physiology of the Animal and Plant Kingdoms.</p> <p>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>Demonstrate knowledge about the components and requirements of a safe lab environment</p> <p>To promote a positive learning environment in our classrooms and on campus.</p>	4. Demonstrate knowledge about the components and requirements of a safe lab environment.
To provide a general liberal arts education that supports specialized academic program sand prepares students for lifelong learning and service in a diverse society.	The School educates its majors to think independently and have the knowledge, skills and vision to work in all types of situations and careers and communicate with all types of people.	<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.</p> <p>To increase the student's ability to interpret and understand his/her world.</p>	
To provide students with a diverse, innovative faculty dedicated to excellence in teaching, scholarly pursuits and continuous improvement of programs.	The School fosters a community of scholars among the faculty and students of the institution.		

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
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.	The School will offer and promote artistic, scientific, cultural, and public affairs events on the campus and in the region.	<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>	

## PART 2

### Revisit Proposed Changes Made in Previous Assessment Cycle

Revisit each instructional/assessment change proposed in Part 5 of the degree program SLR for the preceding year. Indicate whether the proposed change was implemented and comment accordingly. Any changes the department implemented for this academic year, but which were not specifically proposed in the preceding report, should also be reported and discussed here. Please note if no changes were either proposed or implemented or this academic year.

Proposed Change	Implemented? (Y/N)	Comments
We have changed our BIOL 1144 lab manual for the Fall 17.	y	This has aided in our SLO's #s 1, 3 and 4. The new lab manual has more critical thinking, rigor and more closely aligns with our current outcomes.

No other instructional changes were proposed for SLR 2016-2017		
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### PART 3

#### Response to University Assessment Committee Peer Review

The University Assessment Committee provides written feedback on departmental assessment plans through a regular peer review process. This faculty-led oversight is integral to RSU's commitment to the continuous improvement of student learning and institutional effectiveness. UAC recommendations are not compulsory and departments may implement them at their discretion. Nevertheless, respond below to each UAC recommendations from last year's peer review report. Indicate whether the recommendation was implemented and comment accordingly. Please indicate either if the UAC had no recommendations or if the program was not subject to review in the previous cycle.

Peer Review Feedback	Implemented (Y/N)	Comments
Status of implementation of new on-line safety quiz.	N	The laboratory safety quiz is still given as an "in-house" quiz to all of the sections of Biol. 1144L. We have yet to establish the quiz as an "on-line" quiz. With several adjuncts teaching these laboratory sections and changes from semester to semester in adjuncts we have had difficulties making sure each of the adjuncts have a MyRSU shell for their courses and that they are utilizing these shell as part of their instruction.
Explanation of what the pre/post- test covers in Biol. 1144.	Y	A general list of what is covered on the pre/post- test have been added.
Explanation of what each unit exam covers in SLO #2a	Y	A general list of what is covered on the unit exams have been added.
Explanation of what each unit exam covers in SLO #2b	Y	A general list of what is covered on the unit exams have been added.
In your last SLR, SLO #2b indicated that your standard was not meet during the combined springs for Exam 3. Can you say anything about why?	Y/N	Again the sample was so small, and still is, that it difficult to make any changes. On the last SLR SLO #2b indicated our standard was not meet during the combined springs for Exam 3 (65%), but when you add the 5 more students for the current SLR Exam 3

		standard was met (75%). This indicates to us that until we reach larger numbers of students to assess this is not statistically significant and no instructional changes are needed at this time.
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## PART 4

### Evidence of Student Learning

Evidence and analyze student progress for each of the student learning outcomes (same as listed in Part I B above) for the degree program. See the *Appendix* for a detailed description of each component. Note: The table below is for the first program learning outcome. Copy the table and insert it below for each additional outcome. SLO numbers should be updated accordingly.

A. Student Learning Outcome					
SLO #1: Demonstrate an understanding of General Cellular processes.					
B. Assessment Measure	C. Performance Standard	D. Sampling Method	E. Sample Size (n)	F. Results	G. Standard Met (Y/N)
Comprehensive Post Exam. This is the same exam given for pre/post- test evaluations for SLO # 3 but only the scores on the post exam are being measured.  This pre/post exam covers scientific method and evolution, basic	70% of students declaring an AS in Biology major will score 70% or above on the post-exam	Administered to all students in General Cellular Biology (BIOL 1144) during both Fall and Spring terms but only the declared AS in Biology students was analyzed.	Fall 17 and Spring 18 8 students	The total number of students in BIOL 1144 for both semesters was 425 students. Among them, we had only 8 that could be assessed for the AS in Biology. Average post test score was 70.8% and only 63% scored above 70% (50% in the Fall 17 and 75% in the Spring 18).  Below are our results from this assessment cycle.	N

A. Student Learning Outcome																			
SLO #1: Demonstrate an understanding of General Cellular processes.																			
B. Assessment Measure	C. Performance Standard	D. Sampling Method	E. Sample Size (n)	F. Results	G. Standard Met (Y/N)														
chemistry, biological macromolecules, cellular energetics, cellular genetics and cell reproduction.				<div>Fall 17 and Spring 18 Post test Score Distribution</div> <table><tr><td>0-49%</td><td>1</td></tr><tr><td>50-59%</td><td>0</td></tr><tr><td>60-69%</td><td>2</td></tr><tr><td>70-79%</td><td>3</td></tr><tr><td>80-89%</td><td>2</td></tr><tr><td>90-100%</td><td>0</td></tr><tr><td>Total</td><td>8</td></tr></table>	0-49%	1	50-59%	0	60-69%	2	70-79%	3	80-89%	2	90-100%	0	Total	8	
0-49%	1																		
50-59%	0																		
60-69%	2																		
70-79%	3																		
80-89%	2																		
90-100%	0																		
Total	8																		
H. Conclusions																			
<p>We did not meet our performance standard.</p> <p>Since only declared AS in biology students were analyzed this is an extremely small sample size. We were able to assess only 8 students and even if we include last years' SLR we still only have a total of 29 students. The faculty believed this is still too small of a sample sized to be statistically significant. Our plan is to continue to separate out the AS students and over the next few years to increase our total numbers and cumulatively add up the results to make our assessment measurement more robust.</p> <p>The strengths for this assessment measure is that we will be able to better assess just the AS majors in the future</p> <p>The weakness of this measure is the low number of students that we are currently able to assess. Faculty cannot currently make valid instructional changes with such a low number of students assessed.</p>																			

A. Student Learning Outcome																																			
SLO #2: Apply understanding of the taxonomy, morphology, and physiology of the Animal and Plant Kingdoms.																																			
B. Assessment Measure	C. Performance Standard	D. Sampling Method	E. Sample Size (n)	F. Results	G. Standard Met (Y/N)																														
2a. Unit exams that assess the understanding of taxonomy, morphology, and physiology of plants.  Exam 1-covers anatomy & physiology of tissues of vascular plants  Exam 2-covers anatomy & physiology of roots and soils  Exam 3-covers anatomy and physiology of stems and leaves  Exam 4-covers anatomy & physiology of flowers, fruits, seeds and photosynthesis	2a. At least 70% of students in General Botany (BIOL 2104) declaring an AS in Biology 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 but only the AS students will be analyzed by the faculty involved.	2a. Fall of 2017 had 3 and Spring of 2018 had 0 students assessed	2a. During the Fall of 2017 Botany had only 3 students out 45 students were AS Biology majors. The following Table summarizes the Fall 17 results  <div>FALL 2017 SCORE DISTRIBUTIONS</div> <table><tr><td>Exam</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>100-90% =</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>89-80% =</td><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>79-70% =</td><td>0</td><td>2</td><td>1</td><td>2</td></tr><tr><td>69-60% =</td><td>1</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0- 59% =</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <div>Percent of students making 70% or better on Unit Exams</div> <div>Exam 1 = 66</div> <div>Exam 2 = 66%</div> <div>Exam 3 = 100%</div> <div>Exam 4 = 100%</div> <div>During the Spring 2018 No AS in Biology students were declared, therefore no data is available for this semester.</div>	Exam	1	2	3	4	100-90% =	1	1	1	1	89-80% =	1	0	1	0	79-70% =	0	2	1	2	69-60% =	1	0	0	0	0- 59% =	0	0	0	0	N
Exam	1	2	3	4																															
100-90% =	1	1	1	1																															
89-80% =	1	0	1	0																															
79-70% =	0	2	1	2																															
69-60% =	1	0	0	0																															
0- 59% =	0	0	0	0																															

2b Unit exams that assess the understanding of taxonomy, morphology, and physiology of animals.  Unit exam 1 Covers Evolution and Taxonomy  Unit exams 2-6 cover the morphology, physiology, and phylogeny of specific animal phyla	2b. At least 70% of students declaring an AS in Biology 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 the declared AS in Biology students will be reported.	2b.10 students assessed	<p>2b. During the Fall 2017 and Spring 18 Zoology had only 5 students out 76 students were AS Biology majors. The following Table summarizes the Fall 17 and Spring 18 results.</p> <p style="text-align: center;">FALL 2017 and SPRING 18 SCORE DISTRIBUTIONS</p> <table><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>0</td><td>2</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>89-80% =</td><td>3</td><td>1</td><td>1</td><td>1</td><td>2</td><td>0</td></tr><tr><td>79-70% =</td><td>1</td><td>1</td><td>2</td><td>2</td><td>2</td><td>1</td></tr><tr><td>69-60% =</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>0- 59% =</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>2</td></tr></table> <p><u>Percent of students making 70% or better on Unit Exams for Fall 16 and Spring 17</u></p> <p>Exam 1 = 80% Exam 2 = 80% Exam 3 = 80% Exam 4 = 80% Exam 5 = 100% Exam 6 = 40%</p> <p>During the Fall 2017 and Spring 18 70% of AS students made 70% or better on five of the six unit exams.</p> <p>Because of low numbers of AS Biology students we combined scores from previous semesters to obtain a more robust analysis. All of the Fall semesters from 2013-2017 are combined together and all of the Spring semesters from 2014-2018 are combined together to give an overall analysis of all 39 students that</p>	Exam	1	2	3	4	5	6	100-90% =	0	2	1	1	1	1	89-80% =	3	1	1	1	2	0	79-70% =	1	1	2	2	2	1	69-60% =	1	0	0	0	0	1	0- 59% =	0	1	1	1	0	2	Y/N
Exam	1	2	3	4	5	6																																									
100-90% =	0	2	1	1	1	1																																									
89-80% =	3	1	1	1	2	0																																									
79-70% =	1	1	2	2	2	1																																									
69-60% =	1	0	0	0	0	1																																									
0- 59% =	0	1	1	1	0	2																																									



				<p>where declared AS Biology majors. We combined the Fall semester together and Spring semesters together to also analyze any differences between the two semesters.</p> <p>Percent of students making 70% or better on Unit Exams for Fall 13; Fall 14 , Fall 15, Fall 16 &amp; Fall 17  Exam 1 = 71%  Exam 2 = 71%  Exam 3 = 71.4%  Exam 4 = 76%  Exam 5 = 86%  Exam 6 = 81%</p> <p>Percent of students making 70% or better on Unit Exams for Spring 14, Spring 15 , Spring 16, Spring 17 &amp; Spring 18  Exam 1 = 69%  Exam 2 = 75%  Exam 3 = 75%  Exam 4 = 81%  Exam 5 = 81%  Exam 6 = %</p>	
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## H. Conclusions

2a. For Fall 17 and Spring 18 we did not meet our performance stands on two out of four unit exams which was similar to that of previous academic year. We only assessed 3 students this academic year and the number is still not significantly large enough to make a serious adjustment based on the assessment result. We have had only 14 students since our SLR 2015-2016 still a statistically small number but using a cumulative number in the future and should help us eventually make for a better assessment in the future.

2b. For Fall 17 and Spring 18, we did not meet our performance standards on one out of the six unit exams. Analyzing only one year with a total of only 5 students is such a small sample that it is not statistically valuable. So we have begun the process of combining several years of data (the last four SLRs to obtain a more statistically significant analysis. Although "teasing out" the AS students for the last four SLRs have yet to accumulate a significant

number of students, if we combine the last five SLRs we are still analyzing only 39 students. With the combined semesters we are still meeting our standards except on one Unit exam 1 during the Spring semesters. Cumulatively for the 39 students that have been assessed over the last five SLRs 70% of the students have made 70% or better on all six unit exams except for Exam 1. Because this is still such a low number of students (39) it is believed that this is not a statistically significant number to warrant instructional changes at this time. For example during our last SLR (2016-2017) we meet our standards on all units exams except for exam 3 during the combined springs but during our current SLR (2017-2018) we meet our standards on exam 3 (75%) in the combine springs. We did not meet our standards for the combined falls for exam 1 (69%), while in our previous SLR we did meet exam 1 (70%) standards during the combined falls. So until we get a larger sample size to make our statistics more robust, that no instructional changes are required at this time.

A. Student Learning Outcome																											
SLO #3: Demonstrate an understanding of the atom, compounds, matter, gases, solutions, atomic theory, bonding chemical reactions.																											
B. Assessment Measure	C. Performance Standard	D. Sampling Method	E. Sample Size (n)	F. Results	G. Standard Met (Y/N)																						
Comprehensive Pre-Post Exam.	70% of AS in Biology students will improve on the post-test by 20% or greater over the pre-test	Pre/Post Test given to all students in both Fall and Spring terms but only the AS biology students were analyzed.  Conducted as pre/post- test.	Fall 17 4  Spring 18 4	This table summarizes the difference in student scores for the pre & post test scores for Fall 17 and Spring 18.  Fall 17 and Spring 18 Score Distribution (Post Test Improvement) <table><tr><td>0-10%</td><td>1</td></tr><tr><td>10-20%</td><td>1</td></tr><tr><td>20-30%</td><td>1</td></tr><tr><td>30-40%</td><td>2</td></tr><tr><td>40-50%</td><td>2</td></tr><tr><td>50-60%</td><td>1</td></tr><tr><td>60-70%</td><td>1</td></tr><tr><td>70-80%</td><td>0</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>32.0</td></tr></table>	0-10%	1	10-20%	1	20-30%	1	30-40%	2	40-50%	2	50-60%	1	60-70%	1	70-80%	0	80-90%	0	90-100%	0	Average gain:	32.0	Y
0-10%	1																										
10-20%	1																										
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30-40%	2																										
40-50%	2																										
50-60%	1																										
60-70%	1																										
70-80%	0																										
80-90%	0																										
90-100%	0																										
Average gain:	32.0																										

<b>H.</b>					
Student scores on the post-test improved by an average of 75% for the Fall 17 and Spring 18. Our goal of as least a 20% increase was met.					
Even with our small sample size our standard was meet.					

<b>A.</b>					
<b>Student Learning Outcome</b>					
SLO #4: Demonstrate knowledge about the components and requirements of a safe lab environment.					
<b>B. Assessment Measure</b>	<b>C. Performance Standard</b>	<b>D. Sampling Method</b>	<b>E. Sample Size (n)</b>	<b>F. Results</b>	<b>G. Standard Met (Y/N)</b>
A laboratory exercise and worksheet will be administered to all students in Biol. 1144.	100% of the students in BIOL 1144L will complete and 100% will pass quiz 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 pass/fail exercise. Any student not passing the exercise will be required to repeat the exercise until they can pass.	All students in majors biology course ( BIOL 1144L) were sampled during the Fall 2016 and Spring 2017	275	Out of the 275 students all completed the exercise with a passing grade.	Y
<b>H.</b>					

### Conclusions

Although our goal was achieved and students are learning proper laboratory safety, the coordination and implementation of this process has continued to be challenging because of the number of adjuncts teaching the labs, but with increased communication and coordination by our Department Head it has become a more seamless process and will be offered on-line in the future.

## PART 5

### Proposed Instructional or Assessment Changes

Learning outcomes assessment can generate actionable evidence of student performance that can be used to improve student success and institutional effectiveness. Knowledge of student strengths and weakness gained through assessment can inform faculty efforts to improve course instruction and program curriculum. Below discuss potential changes the department is considering which are aimed at improving student learning or the assessment process. Indicate which student learning outcome(s) will be affected and provide a rationale for each proposed change. These proposals will be revisited in next assessment cycle.

Proposed Change	Applicable Learning Outcomes	Rationale and Impact
No instructional changes are planned at this time.		

## PART 6

## Summary of Assessment Measures

A. How many different assessment measures were used? 3

B. List the direct measures (see appendix):

Pre/Post tests in Cellular Biology (BIOL1144)

Unit exam scores in General Botany (BIOL2014)







Unit exam scores in General Zoology (BIOL2205)

C. List the indirect measures (see appendix): 0

## PART 7



### Faculty Participation and Signatures

A. Provide the names and signatures of all full time and adjunct faculty who contributed to this report.

Faculty Name	Assessment Role	Signature
Dr. Jerry Bowen	Reviewed report, collected data	
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. Jaeho Kim	Reviewed report	not available
Dr. Sue Katz	Reviewed report	
Dr. Craig Zimmerman	Collected data for BIOL 1144, analyzed data	
Dr. Jin Seo	Reviewed report, collected data	
Dr. Lisa Overall	Reviewed report, collected data	not available

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**B. Reviewed by:**

Titles	Name	Signature	Date
Department Head	Dr. Jerry Bowen		25 May 2018.
Dean	Dr. Keith Martin		5-29-18

## Appendix

### Student Learning Outcome

Student learning outcomes are the observable or measurable results that are expected of a student following a learning experience. Learning outcomes may address knowledge, skills, attitudes, or values that provide evidence that learning has occurred. They can apply to a specific course, a program of study, or an institution. Outcomes should be worded in language that clearly implies a measurable behavior or quality of student work. Outcomes should also include Bloom's action verbs appropriate to the skill level of learning expected of students.

#### Examples:

*Students will be able to apply principles of evidence-based medicine to determine clinical diagnoses and implement acceptable treatment modalities.*

*Students will be able to articulate cultural and socioeconomic differences and the significance of these differences for instructional planning.*

### Assessment Measure

An assessment measure is a tool or instrument used to gather evidence of student progress toward an established learning outcome. Every program learning outcome should have at least one appropriate assessment measure. Learning outcomes are frequently complex, however, and may require multiple measures to accurately assess student performance. Assessment plans should try to incorporate a combination of direct and indirect assessment measures. Direct provide concrete evidence of whether a student has command of a specific subject or content area, can perform a certain task, exhibits a particular skill, demonstrates a certain quality in their work, or holds a particular value. Because direct measures tap into actual student learning, it is often viewed as the preferred measure type. Indirect measures assess opinions or thoughts about the extent of a student's knowledge, skills, or attitudes. They reveal characteristics associated with learning, but they only imply that learning has occurred. Both types of measures can provide useful insight into student learning and experiences in a program. Each also has unique advantages and disadvantages in terms of the type of data and information it can provide. Examples of common direct and indirect measures are listed below.

#### Direct Measures

- Comprehensive exams
- Class assignments
- Juried review of performances and exhibitions
- Internship or clinical evaluations
- Portfolio evaluation
- Pre/post exams
- Third-party exams such as field tests, certification exams, or licensure exams
- Senior thesis or capstone projects

#### Indirect Measures

- Graduate exit interviews
- Focus group responses
- Job placement statistics
- Graduate school placement statistics
- Graduation and retention rates
- Student and alumni surveys that assess perceptions of the program
- Employer surveys that assess perceptions of graduates
- Honors and awards earned by students and alumni.

## **Performance Standard**

A performance standard is a clearly-defined benchmark that establishes the minimally-acceptable level of performance expected of students for a particular measure.

### Examples:

*At least 70% of students will score 70% or higher on a comprehensive final exam.*

*At least 75% of students will earn score a "Proficient" or higher rating on the Communicate Effectively rubric.*

## **Sampling Method**

Sampling method describes the methodology used for selecting the students that were assessed for a given measure. In some cases, such as most course-embedded measures, it is possible to assess all active enrolled students. In other cases, however, it is not feasible to measure the population of all potential students. In these cases, it is important that a well-designed sampling scheme be used to ensure the sample of students measured is an unbiased representation of the overall population. Where multiple instructors teach a particular course, care should be taken to assess students across all instructors, including adjuncts.

### Examples:

*All students enrolled in BIOL 4801 Biology Research Methods II*

*All majors graduating in the 2016-17 academic year.*

## **Sample Size**

Sample size is the number of students from which evidence of student learning was obtained for a given assessment measure.

## **Results**

Results are an analytical summary of the findings arising from the assessment of student performance for a particular assessment measure. Typical presentation includes descriptive statistics (mean, median, range) and score frequency distributions.

## **Standard Met?**

This is a simple yes/no response that indicates whether the observed level of student performance for a particular measure meets or exceeds the established standard. An N/A may be used where circumstances prevented the department from accurately assessing a measure.

## **Conclusion**

The conclusion is a reflective summary and determination of the assessment results obtained for a specific learning outcome. Questions to consider in this section include the following:

- Does the assessment evidence indicate the learning outcome is being satisfactorily met?
- Where multiple measures are used for a single outcome, do the results present a consistent or contradictory pattern?
- What are the most valuable insights gained from the assessment results?
- What strengths and weaknesses in student learning do the results indicate?
- What implications are there for enhancing teaching and learning?
- How can the assessment process be improved?