Degree Program Student Learning Report

Revised November 2019

Department of Biology

BS in Biology

For 2019-2020 Academic Year

PART 1

Degree Program Mission and Student Learning Outcomes

A. State the school, department, and degree program missions.

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. 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.	Under the Bachelor of Science in Biology, there are two emphases: the Medical/Molecular emphasis and the Environmental Conservation emphasis. The four-year program seeks to develop a biologist well-grounded in either area of emphasis. The student integrates mathematical and physical science concepts into biology. The student uses the scientific method as well as evaluates others' use of this method of inquiry. He/she writes and presents scientific papers and reports. The degree is augmented with individual research and internships for successful postgraduate and professional careers.

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
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.	The School will offer and promote artistic, scientific, cultural, and public affairs events on the campus and in the region.	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.	5. To apply scientific method and interpret current technology and research techniques relating to the biological sciences **(This outcome meets two different departmental purposes).**

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
No instructional/ Assessment changes were proposed in the previous cycle.	N/A	

A. Student Learning Outcome					
SLO #1: To demonstrate an understanding of the fundamental processes of life					
B. Assessment Measure	**C. Performance Standard**	**D. Sampling Method**	**E. Sample Size (n)**	**F. Results**	**G. Standard Met (Y/N)**
1a. Survey in BIOL 4801 - Biology Research Methods II assessing understanding of program objective 1.	1a. On the survey, 70% of our students will rank them-selves as a 4 or greater (Likert scale from 1 to 5) on their understanding of the fundamental processes of life.	1a. Most of the students in the BIOL 4801 classes in Fall 2019 and Spring 2020.	1a. 41	1a. Questions were based on a Likert scale from 1 to 5, with 1 being very poor and 5 being excellent. Result average was 4.3. Of the 41 students surveyed, 17 (42%) ranked themselves as 5 (excellent) and 19 (46%) ranked themselves as 4 (Good), and 5 (12%) ranked themselves as a 3 (average) on mastery of program objective 1. This result is comparable to last year's result, which had the sample size of 42. 10 (24%) ranked themselves as 5 and 28 (66%) ranked themselves as 4, and 4 (10%) ranked themselves as a 3. The last year average was 4.3.	
1b. Education Testing Service Major Field Assessment National Exam for Biology in BIOL 4801, Biology Research Methods II.	1b. The program mean will be within one standard deviation of the normative mean on Major Fields Test in biology.	1b All students in BIOL 4801 classes in Fall 2019 and a few students in Spring 2020 due to COVID-19 crisis.	1b. 24	1b. Our students had a mean score of 146±9 for the ETS compared with the national average 153±13. Student scores ranging over 140 with 17 of 24 students (within one standard deviation of the national mean).	1b. Y
1c. Education Testing Service Major Field Assessment Exam for Biology in BIOL 4801,	1c. ETS exam reports four sub-scores in; subset #1) Cell Biology, subset #2)	1c. All students in BIOL 4801.	1c. 24	1c. Across both degree options in biology program (Medical Molecular option and Environmental Conservation option), students averaged 146±9 while the	1c. Y

A. Student Learning Outcome					
SLO #1: To demonstrate an understanding of the fundamental processes of life					
B. Assessment Measure	**C. Performance Standard**	**D. Sampling Method**	**E. Sample Size (n)**	**F. Results**	**G. Standard Met (Y/N)**
				with the national average 52±13. 19/24 students were within one standard deviation of the National Mean.	

H. Conclusions

1a. 80% indicated understanding of program objective 1. Our goal of 70% was reached. These results are an indirect measure and are of our student's perception of whether they think they have an understanding of outcome #1. Although subjective, it is important to know whether our students believe they are learning. According to our results, we are accomplishing our goal. This also allows us to compare a student's perception of their knowledge to a more objective method (the ETS). No instructional changes are anticipated.

1b. Our average student score was in one standard deviation of the national mean. No new instructional changes are anticipated.

1c. Regarding cumulative ETS scores across all subsets, our students performed in one standard deviation of the national mean. No new instructional changes are anticipated.

A. Student Learning Outcome					
SLO #2: To apply scientific method and interpret current technology and research techniques relating to the biological sciences.					
B. Assessment Measure	**C. Performance Standard**	**D. Sampling Method**	**E. Sample Size (n)**	**F. Results**	**G. Standard Met (Y/N)**
This exam was administrated with the pre- test given on first class and the post-test given at time of final exam.				All students except one (59/60=98%) completed Genetics in Fall 2019 and Spring 2020 increased their post-test exam scores comparing to pre-exam scores. Average changes of pre-post scores were 32% increase.	

H. Conclusions

2a. 86% indicated understanding of program objective 2. Our goal of 70% was reached. These results are an indirect measure and are of our student's perception of whether they think they have an understanding of outcome #2. Although subjective it important to know whether our students believe they are learning. According to our results, we are accomplishing our goal. No new instructional changes are anticipated.

2b. The mentoring process between faculty mentor and mentee is providing sufficient feedback to students as they prepare the final version of their papers. Students are able to present their research findings in a comprehensive manner, as a combined result of efforts by the students and faculty mentors. It is hard to separate two No new instructional changes are anticipated.

2c. Nearly all students (98%) completed this course increased their post-test exam scores comparing to pre-exam scores. 85% students are 60% or above on post-test. 85% of students were the same or higher on their post-test than the highest pre-test score (60%) of all students. The pre-post test score averages were significantly increased. No new instructional changes are anticipated.

A. Student Learning Outcome					
SLO #3: To be adequately prepared for transition into a productive professional career.					
B. Assessment Measure	**C. Performance Standard**	**D. Sampling Method**	**E. Sample Size (n)**	**F. Results**	**G. Standard Met (Y/N)**
				6 Veterinarian 11 PA 3 PT 3 OT 12 Work in hospital 2 Pathology assistant 1 podiatry 1 Mortician 1 Doctor of Naturopathy 19 Other occupations, including businesses It is also important to note that not all professional schools require a degree and for this reason these numbers under represented the actual number of RSU students enrolled or graduated from professional schools.	
H. Conclusions					
3a. We are going to use online survey, and the data will be collected during the summer 2020. 3b. This data suggests that 92% of our graduates are either working in the professional field of biology or are in graduate or professional school. This does meet our expected values of 80%. No new instructional changes are anticipated. Of note, we do not have data for over 127 graduates.					

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.

Faculty Name	Assessment Role	Signature
Dr. Jin Seo	Wrote report, collected data, & analyzed data	5/25/20
Dr. Jerry Bowen	Collected data & reviewed report	26 May 2020
Dr. Sue Katz	Collected data & reviewed report	Sue Katz via email
Dr. Jae-Ho Kim	Collected data & reviewed report	5/28/2020
Ms. Cheyanne Olson	Collected data & reviewed report	5/26/20
Dr. Lisa Overall	Collected data & reviewed report	Lisa Overall via email
Dr. Mark Peaden	Reviewed report	5/26/2020
Dr. Uduak Udoh	Reviewed report	Uduak Udoh 5/28/2020
Dr. Craig Zimmermann	Collected data & reviewed report	

B. Reviewed by:

Titles	Name	Signature	Date
Department Head	Dr. Jerry Bowen		26 May 2020
Dean	Dr. Keith Martin	Keith W. Martin	6/20/20