Degree Program Student Learning Report

Revised November 2019

Select Academic Department

AS in Biological Sciences

For 2021-2022 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.	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.

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
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	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.		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.
To provide a general liberal arts education that supports specialized academic programs and 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.	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.	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.	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

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 changes were proposed for SLR 2021-2022	N/A	

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
The AS Biology Student Learning Report for 2020-2021 was not peer reviewed.	NA	

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-exam	70% of students declaring an AS in Biology major will	Pre/Post Exam given to all students during 2021-2022 academic year. However, only	Sample size by semester: Fall 21: 12 Spring 22: 0	The total number of students in BIOL 1144 for 2021-2022 semesters was 226 students. Among them, we had only 12	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)**
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 chemistry, biological macromolecules, cellular energetics, cellular genetics, and cell reproduction.	score 70% or above on the post-exam	the AS biology students were analyzed.		that could be assessed for the AS in Biology – all enrolled in fall of 2021. The average post-exam score was 52% and five students scored below 70% Below are our results from this assessment cycle. **Fall 21 Post test Score Distribution** 0-49% 2 50-59% 2 60-69% 4 70-79% 3 80-89% 1 90-100% 0 Total 12	

H. Conclusions
We have not met our performance standards. Since only declared AS in biology students were analyzed this is an extremely small sample size. Also, it is worth noting that four AS students were enrolled in a new full-time faculty members course for BIOL 1144. Fall 2021 was this instructors first semester at RSU and teaching in higher education.

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)**
We plan to continue to separate out the AS students and over the next few more years to increase our total numbers and cumulatively add up the results to make our assessment measurement more robust. The strength of this assessment measure is that we will be able to better assess just the AS majors in the future across multiple years, despite recent changes in instructors. 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 and recent additions to the faculty.					

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. The final exam of General Botany was a comprehensive test and it covered taxonomy, morphology, and physiology of plants.	2a. At least 70% of students in General Botany (BIOL 2104) declaring an AS in Biology will score 70% or better on the final comprehensive exam.	2a. All students in General Botany will be given a comprehensive final exam pertaining to this objective but only the AS students will be analyzed by the faculty involved.	2a. Sample size by semester: Fall: 0 Spring: 2	Only two AS student took botany during AY 2021-22. These students scored a 56% and 77% on the final.	N
2b Unit exams that assess the understanding of	2b. At least 70% of students declaring an AS in Biology in	2b. All students General Zoology (BIOL 2205) will be	2b. One student assessed	2b. During the Fall 2021 and Spring 2022, Zoology had only two students out of 76 students were AS Biology majors. The	Y

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)**
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	General Zoology (BIOL 2205) will score 70% or better on all unit exams.	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.		following Table summarizes the Fall 2021 and Spring 2022 results. <u>AS student scores above 70% on unit exams during Fall 21 and Spring 22</u> Exam 1 = 77% Exam 2 = 75% Exam 3 = 73% Exam 4 = 81% Exam 5 = 90% Exam 6 = 88%	

H. Conclusions
2a. For Fall 21 and Spring 22 we did not meet our performance stands on the final exam. We only assessed two student this academic year and the number is still not significantly large enough to make a conclusive conclusion based on the assessment result. To date, we have had less than 30 students since our SLR 2015-2016. With additional data collected, we can begin to formally analyze our cumulative number in the near future for a more formal assessment. 2b. For Fall 21 and Spring 22, we met our performance standards on all six-unit exams. Analyzing only one year of data with a total of five students presents a challenge due to small sample size, leading to false conclusions and incorrect statistical analyses. When combining previous years SLR data, we have a total of 50 AS biology students for review. Previous years descriptive data shows that exams one and three did not continually meet standards. For future assessment, the instructor of this course proposes a change in methods. In order to assess compressive student knowledge, future Zoology students will be given a pre and post exam covering a broad range of the course material. The new standard the instructor is seeking is that 70% of AS students will receive a 70% or higher on the post instruction exam.

A. Student Learning Outcome					
SLO #3: Demonstrate an understanding of the atom, compounds, matter, gases, solutions, atomic theory, bonding chemical reactions, and chemical kinetics.					
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 Exam given to all students enrolled in BIOL 1144 during fall 2021 or spring 2022. However, only the AS biology students were analyzed Conducted as Pre/Post Exam.	Sample size by semester: Fall 21: 12 Spring 22: 0	This table summarizes the difference in student scores for the pre & post exam scores for Fall 21. Spring 20 Score Distribution (Post-Exam Improvement) 0-10% 1 10-20% 5 20-30% 3 30-40% 2 40-50% 1 **Average gain:** 21%	N

H. Conclusions
Students improved on the post-test by an average of 21%. Our goal of as least a 20% increase average of all assessed students was met. However, there was only 50% of the students achieved the goal of more than 20% improvement on the post-exam compared to the pre-exam that was due to an extremely small number of the sample. These summary statistics omit any students that withdrew or were unable to take the post instruction exam.

A. Student Learning Outcome					
SLO #4: Demonstrate knowledge about the components and requirements of a safe lab environment.					
B. Assessment Measure	**C. Performance Standard**	**D. Sampling Method**	**E. Sample Size (n)**	**F. Results**	**G. Standard Met (Y/N)**
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 the 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 2021 and Spring 2022 Tests were administered in an online format.	226	Out of the 226 students, all completed the exercise with a passing grade.	Y
H. Conclusions					
Our set goal was achieved and students are learning proper laboratory safety across the multiple lab sections. The lab test was administered online which allowed instructors to monitor students' qualification to attend the rest of the labs on a real-time basis. To accommodate the recommendation from the University Assessment Committee, we may change our assessment method in a way that allows instructors to monitor student's progress rather than a final outcome. This suggested method should be applicable within our new LMS, Blackboard.					

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
Changes in assessment methods of Zoology (SLO 2)	Beginning Fall 2022, students enrolled in BIOL 2205 (General Zoology) will be assessed using a Pre/Post exam consisting of 50 multiple choice questions.	The instructor is moving to a pre/post exam for multiple reasons – 1 – This assessment will identify key components students know prior to the course and allow the instructor to modify material for future instruction. 2 – Post examination for the total course will identify components or SLOs that the students have not learned and/or retained.

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)
Lab Safety Test in Cellular Biology (BIOL1144L)
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	Collected data, reviewed report	31 MAY 2022
Dr. Jaeho Kim	Reviewed report	Not Available
Mrs. Cheyanne Olson	Reviewed report	
Dr. Mark Peaden	Collected data, prepared, reviewed report	
Mr. Rance Kingfisher	Reviewed report	
Dr. Jin Seo	Reviewed report	not available
Dr. Hannah King	Reviewed report	
Dr. Craig Zimmerman	Reviewed report	

B. Reviewed by:

Titles	Name	Signature	Date
Department Head	Dr. Jerry Bowen		31 MAY 2022
Dean	Dr. Keith Martin		6/3/22