



2021 Academic Program Assessment Report

Biology MS

Program current assessment plan here:

[https://www.csupueblo.edu/assessment-and-student-learning/\\_doc/2019/report/biology-ms-assessment-plan-2019.pdf](https://www.csupueblo.edu/assessment-and-student-learning/_doc/2019/report/biology-ms-assessment-plan-2019.pdf)

Program prior assessment report here:

[https://www.csupueblo.edu/assessment-and-student-learning/\\_doc/2020/report/biology-ms-assessment-report-2020.pdf](https://www.csupueblo.edu/assessment-and-student-learning/_doc/2020/report/biology-ms-assessment-report-2020.pdf)

Report Completed By: Claire Ramos

Date Report Completed: June 1, 2021

Faculty members involved in this Assessment: Bickford, Caprioglio, Gabaldon, Garcia Costas, Sandmeier, Smith

Please describe this year's assessment activities and follow-up for your program below. (Separate sheet for each undergraduate major, stand-alone minor, certificate, and graduate program in your department.) Please also submit any addenda such as rubrics which are not available in your assessment plan. The reports will be available to the Dean of your college/school and to the Executive Director for Assessment as well as faculty peer reviewers.

**Brief Statement of Program Mission and Goals:**

The Biology Program provides the biological component of the liberal arts education. We promote student understanding of biological concepts relevant to the individual and society, and foster an appreciation of scientific inquiry. Biology is an integral subject for other majors' requirements and the Biology department is committed to fulfilling these service courses and general education for other departments. The graduate program leading to the degree of Master of Science in Biology prepares students to apply basic scientific principles to the practical biological problems encountered in business, industry, government, and education. Graduates from the program will be able to apply the techniques of scientific research to real-world biological problems. Our students obtain a broad education, covering a wide variety of biological disciplines. We focus on the student, facilitating hands-on experience, interactions with faculty, and opportunities for graduate research in topics of regional interest.

**I. Assessment of Student Learning Outcomes (SLOs) in this cycle. Including processes, results, and recommendations for improved student learning. Use Column H to describe improvements planned for the year based on the assessment process.**

A. Your program SLOs are pasted here verbatim from your assessment plan. Please enter info in columns B-H only for those assessed during this annual cycle.	B. When was this SLO last reported on prior to this cycle? (semester and year)	C. What method was used for assessing the SLO? Please include a copy of any rubrics used in the assessment process.	D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved (N).	E. What is the expected proficiency level and how many or what proportion of students should be at that level?	F. What were the results of the assessment? (Include the proportion of students meeting proficiency.)	G. What were the department's conclusions about student performance?	H. What changes/improvements to the program are planned based on this assessment?
1. Mastery of the Scientific Method – Independent development and mastery of problem solving skills including experimental design, execution, critical analysis, and interpretation of the results of original scientific experimentation (thesis) or experiential learning (internship).	Spring 20	Rubric administered during thesis defense and at committee meetings. (Appendix 1)	100% (4) of graduating masters students and 65% (31 of 48 student semesters) of continuing students	It is expected that 100% of students are at least proficient at this SLO by thesis defense (i.e. average score is ≥ 3, where 1=ineffective, 2=developmental, 3=proficient, 4=excellent. See assessment plan for scoring details)	100% of graduating students were scored proficient (3, 3, 4, 4). 68% of continuing students were scored as proficient (21/31)	By graduation students are performing at the expected level. Prior to graduation, students are still developing skills.	No changes to the program at this time. More data is needed to follow cohorts from the start of the program through graduation.
2. Dissemination of Scientific Products – Persuasive communication and defense of significant results of original scientific investigation presented in both written and oral format at a graduate peerprofessional level.	Spring 20	Rubric administered during thesis defense and at committee meetings. (Appendix 1)	100% (4) of graduating masters students and 65% (31 of 48 student semesters) of continuing students	It is expected that 100% of students are at least proficient at this SLO by thesis defense (i.e. average score is ≥ 3, where 1=ineffective, 2=developmental, 3=proficient, 4=excellent. See assessment plan for scoring details)	100% of graduating students were scored proficient (3, 3.5, 4, 4). 52% of continuing students were scored as proficient (16/31)	By graduation students are performing at the expected level. Prior to graduation, students are still developing skills.	No changes to the program at this time. More data is needed to follow cohorts from the start of the program through graduation.

3. Utilization of the Literature - Critical evaluation of an independently accessed comprehensive body of scientific literature which is project relevant and foundational in supporting and explaining research findings in both written and oral format.	Spring 20	Rubric administered during thesis defense and at committee meetings. (Appendix 1)	100% (4) of graduating masters students and 65% (31 of 48 student semesters) of continuing students	It is expected that 100% of students are at least proficient at this SLO by thesis defense (i.e. average score is $\geq 3$ , where 1=ineffective, 2=developmental, 3=proficient, 4=excellent. See assessment plan for scoring details)	100% of graduating students were scored proficient (3, 3, 4, 4). 68% of continuing students were scored as proficient (21/31)	By graduation students are performing at the expected level. Prior to graduation, students are still developing skills.	No changes to the program at this time. More data is needed to follow cohorts from the start of the program through graduation.
4. Development of a Relevant Knowledge Base - Development of intrinsically held fundamental field-specific knowledge which will be applied to explain and defend research findings at a level of mastery expected by peer-professionals.	Spring 20	Rubric administered during thesis defense and at committee meetings. (Appendix 1)	100% (4) of graduating masters students and 65% (31 of 48 student semesters) of continuing students	It is expected that 100% of students are at least proficient at this SLO by thesis defense (i.e. average score is $\geq 3$ , where 1=ineffective, 2=developmental, 3=proficient, 4=excellent. See assessment plan for scoring details)	100% of graduating students were scored proficient (3, 3.5, 4, 4). 65% of continuing students were scored as proficient (20/31)	By graduation students are performing at the expected level. Prior to graduation, students are still developing skills.	No changes to the program at this time. More data is needed to follow cohorts from the start of the program through graduation.
5. Professionalism and Self Responsibility – Maintain a consistent professional work ethic of independently taking the initiative and motivation to produce tangible products of a quality commensurate with peer-standards in graduate or professional schools or in the career field being pursued.	Spring 20	Rubric administered during thesis defense and at committee meetings. (Appendix 1)	100% (4) of graduating masters students and 65% (31 of 48 student semesters) of continuing students	It is expected that 100% of students are at least proficient at this SLO by thesis defense (i.e. average score is $\geq 3$ , where 1=ineffective, 2=developmental, 3=proficient, 4=excellent. See assessment plan for scoring details)	100% of graduating students were scored proficient (3.5, 4, 4, 4). 90% of continuing students were scored as proficient (28/31)	Most students are performing at the expected level throughout the program.	It may be that most students who select this program already have levels of professionalism and responsibility that are acceptable and therefore this may not be a meaningful SLO. However, more data is needed to assess whether this is true.
<b>Comments on part I:</b>		This is our second year evaluating all 5 SLO's. We had much better faculty participation in evaluating students at committee meetings resulting in 31 of 48 (68%) possible student/semesters being evaluated. We are using the term student/semesters because students are required to have a committee meeting each semester, each student could be evaluated up to twice per year. Some students starting in the spring, or graduating in the fall only have one semester available to evaluate. This is up from 8 of 20 (40%) student/semesters last year. However, because students generally take longer than 2 years to defend their thesis, we still do not have full cohort data from program start to graduation. With another year of data, we should start to have students from the 19/20 cohort completing their theses. The 20/21 cohort is also unusually large (11 students) so in the coming years, they should provide excellent data to fully evaluate the program.					
<b>II. Closing the Loop. Describe at least one data-informed change to your curriculum during the year cycle. These are those that were based on, or implemented to address, the results of assessment from previous cycles.</b>							
<b>A. What SLO(s) or other issues did you address in this cycle? Please include SLOs verbatim from the assessment plan, as above.</b>	<b>B. When was this SLO last assessed to generate the data which informed the change? Please indicate the semester and year.</b>	<b>C. What were the recommendations for change from the previous assessment column H and/or feedback?</b>	<b>D. How were the recommendations for change acted upon?</b>	<b>E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?</b>			
Increase faculty participation in assessment	Spring 20	Engage more faculty in assessment process.	Reminders were sent to faculty during the period of time when committee meetings are held.	The number of faculty participating increases from 4 to 7 faculty. The percentage of committee meetings evaluated increased from 40% to 68%.			
SLO 5: Professionalism and Self Responsibility – Maintain a consistent professional work ethic of independently taking the initiative and motivation to produce tangible products of a quality commensurate with peer standards in graduate or professional schools or in the career field being pursued.	Spring 20	Because 100% of continuing students scored proficient or above in this SLO, determine whether this is a meaningful SLO to measure.	More data was collected.	In our larger sample size, 90% of continuing students were already proficient in this SLO. However, some student still require development for this SLO, therefore, it is meaningful to continue to evaluate.			

<b>Comments on part II:</b>	Reviewers of previous assessment had no suggestions to incorporate into this assessment other than to continue data collection. Because this is a small program, it is difficult to draw conclusions from two years of data. That being said, it does appear that our students are performing at the desired level by the end of the program as we now have a total of 7 students who have graduated under this assessment plan and all performed at the expected level at graduation. Most students are not performing at the desired level in at least one SLO earlier in the program. At this time we are not proposing any changes, but instead are increasing the sample to better measure the progression of students. Next year we should have sufficient data to follow most students from the 19/20 cohort to graduation and we will have 2 years of data on the larger 20/21 cohort, which will allow us to evaluate development of our students on a more fine scale.			
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