



2024 Academic
Program Assessment
Report

Program current
assessment plan
here:

https://www.csupueblo.edu/assessment-and-student-learning/_doc/2019/report/biology-bs-assessment-plan-2019.pdf

Program prior
assessment report
here:

https://www.csupueblo.edu/assessment-and-student-learning/_doc/2023/biology-bs-assessment-report-2023.pdf

Report Completed By:	Amaya Garcia Costas
Date Report Completed:	May 31, 2024
Faculty members involved in this Assessment:	Biology department: all faculty and full time support instructors

Please describe this year's assessment activities and follow-up for your program below. (Separate sheet for each undergraduate)	
Brief Statement of Program Mission and Goals:	The mission of the Biology Department at Colorado State University – Pueblo is to provide quality undergraduate and graduate education for a diverse student population through a comprehensive curriculum that emphasizes experiential learning opportunities, course-embedded laboratories, field experience, internships, and scientific research opportunities.

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. Students will develop a broad-based knowledge and application of concepts, techniques and terminology in molecular, cellular, organismal, evolutionary and ecological biology.	AY22-23, presented in 2023 report	1. ETS Biology MFAT (Major field Assessment) ; 2. Selected questions (n=50) from the Biology GRE test	1. Senior students enrolled in our capstone course (BIOL493) 2. First year students enrolled in our first year seminar course (BIOL171); senior students enrolled in our capstone course (BIOL493)	1. *75% of our senior students score at or above 50% of National percentile on the MFAT exam; 2. *75% of our senior students score at 70% or higher on the GRE in the BIOL 493 class	1. 44% of our seniors (n=8 out of 18 tested) scored higher than the 50% National percentile on the MFAT exam (percentile ranged from 5 to 82%) 2. GRE score for BIOL171 was 21% (n=121), whereas for BIOL493 was 40% (n=17)	1. Relief that the downward trend of the last three years was slightly reversed (our scores kept getting lower and lower; but this year they are higher than 1st year's); these should be the last of the Covid cohort and we have great hope that scores will further improve next year; not satisfied with the overall performance, these scores will not be satisfactory on the long term; we need a couple of more year's worth of data before making any additional changes 2. Our GRE exam is faulty; one of the faculty took the exam along with the students and obtained a 76%; many of the questions used are outdated and not representative of our curriculum	1. Because in previous years the Cell and Molecular category scores were particularly low we have changed our core curriculum to include more Cell and Molecular Biology (now the Molecular course is 3 credits; the Cell Biology course is required rather than elective); we don't expect to see the outcomes of these changes for a couple of years, as students go through the program 2. Faculty were of two minds and we will revisit this first thing in the Fall: either take out the GRE component of the Assessment) or, if kept, rewrite or rechoose the 50 questions used so that they better reflect what we expect our students to learn

2. Students will develop applied scientific skills through field and laboratory experience and data analysis.	AY21-22, presented in 2022 report	1. Lab practical wehre students used lab equipment and analyzed data set up in different stations; 2. Written questions wehre students are asked to evaluate and analyze data	1. Senior students enrolled in our capstone course (BIOL493)	1. Our goal is to have 80% of seniors show proficiency	1. Average proficiency for all stations for Biology majors was 70% of students were proficient; in 6/14 stations (43% of stations), 80% or higher of students showed proficiency; in 11/14 stations (79%), 50% or higher of students showed proficiency 2. Average proficiency for all questions and analyses was 67% of students. 8/18 questions (44.5%) had 80% or higher of students showing proficiency; in 15/18 questions (83%), 50% or higher of students showed proficiency	1. Students performed best in skills that required instrument operation including glet electrophoresis apparatus, microscope (with identification), microcentrifuge; studnets scored lowest in skills that required numerical applications (eg. using scale bars, mesuring surface area, etc.). In many of these instances students failed tho even include units. At least one of the stations (measuring absorbance) needs to be better set up as it was confusing to students, hence the skill was not assessed correctly. 2. As above, students performed lowest in questions that required numercal calculations such as calculating volumes needed for diluting concentrated solutions, or extrapolating data from some graphs. Students performed best on data analysis, such as interpreting cladograms, phylogenetic trees, graphs with experimental data, and gel electrophoresis results.	Faculty discussed how difficult it is to give all studetns the chance to do some of the calculations assessed here (eg. make dilutions of solutions, as those are done by stockroom staff to speed the labs along). It was suggested that, even though students dont get to carry out the actual dilutions, they could still learn how to make them andhave questions about that in lab quizzes (even if they didnt make them themselves). The Chair uses a Math packet at the beginning of one of her lab courses and she will suggest in the fall that Math packts are generated for other lab courses. We will revisit in the Fall to come up with strategies where we don't jsut ask students to interpret graphs, but also to predict and extrapolate data from them
3.Students will develop skills in reading and interpreting the scientific literature and in presenting a synthesis of it accurately in oral and written form.	Not assessed in this cycle						
4.Students will demonstrate critical thinking and problem solving skills using experimental design and the scientific method.	Not assessed in this cycle						

Comments on part I:

We started designing our tools for SLO2 in the Fall; the entire department participated and voted on the different skills and questions to be asked. At last 4 faculty were involved in helping with stations. the Department Chair collected data., analyzed it, and presented it to department

II. Closing the Loop. Describe at least one data-informed change to your

A. What SLO(s) or other issues did you address in this cycle? Please include SLOs verbatim from the assessment plan, as above.	B. When was this SLO last assessed to generate the data which informed the change? Please indicate the semester and year.	C. What were the recommendations for change from the previous assessment column H and/or feedback?	D. How were the recommendations for change acted upon?	E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?
1. Students will develop a broad-based knowledge and application of concepts, techniques and terminology in molecular, cellular, organismal, evolutionary and ecological biology.	It is assessed annually, hence the last time was: AY22-23, presented in 2023 report	Assessments are in place and being completed, but discussion with faculty, implementing changes and/or acting on assessment does not seem substantive based on this reporting cycle.	We spent the fall discussing adjustments to our core curriculum, including but not limited to, comaand presented those to CAPB; these changes have now been approved.	Not applicable; it will take a few additional assessment cycles for the changes to have an impact

Assessment plan link

[biology-bs-assessment-plan-2024.docx](#)