CSU PUEBLO	**2021 Academic Program Assessment Report**	**Program current assessment plan here:**	https://www.csupueblo.edu/assessment-and-student-learning/_doc/results-and-reports/Plans/Assesment%20Plan-BIOCHEM.pdf
	Biochemistry MS	**Program prior assessment report here:**	https://www.csupueblo.edu/assessment-and-student-learning/_doc/2020/report/biochemistry-ms-assessment-report-2020.pdf

Report Completed By:	**Richard Farrer**
Date Report Completed:	**July 14, 2021**
Faculty members involved in this Assessment:	**None**

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:	

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. Biochemistry-MS students will be able to evaluate the scientific literature and to use it in their courses and research.	Spring 2020 by Richard Farrer.	This SLO is assessed through both performance in coursework and performance during thesis committee meetings All 500 level courses involve some evaluation of literature; however all MS students begin their coursework in CHEM510, where students and advisors are expected to develop a thesis plan associated with the research expected from the student. Additionally, in CHEM593 (seminar) and CHEM589 (thesis defense), students are required to demonstrate significant knowledge of scientific literature. For students who take the intership option, CHEM588 is the intership defense. Also, students are evaluated during research credits, CHEM599 and CHEM592 during meetings with their advisor and group meetings.	CHEM502(0 students), CHEM510(0 students), CHEM511(0 students), CHEM512 (0 students), CHEM512L (0 students), CHEM519(0 students), CHEM519L(0 students), CHEM529(0 students), CHEM531 (0 students), CHEM578(0 students), CHEM589(0 students), CHEM592(0 students), CHEM593(0 students), CHEM595 (0 students), and CHEM599(0 students). Also, all students have had at least one committee meeting this past year.	All students should receive a grade of A or B in all graded courses. All students should have positive reviews from committee meetings – which shows that the student is making the necessary progress toward graduation. All students should receive an A in the thesis defense – showing mastery of their area of study and research. Realistically, some student perform poorly in classwork – many students not prepared for depth, breadthe, and scope of courses and/or research. Students must maintain a 3.0 GPA to remain in good standing in the program.	All students progressing toward thesis defense and graduation. No student is currently below the 3.0 GPA requirement	All students progressing toward completion of degree.	None.

2. Biochemistry-MS students will be able to effectively communicate scientific research, both their own and information from the research literature, in written and oral fashions.	Spring 2020 by Richard Farrer.	See SLO 1. Coursework, research, and committee meetings are used to guide and direct the student toward mastery in this area, and also for purposed of evaluating the students' growth and abilities in these areas. Additionally, individual research group meetings often require students to discuss their research with the faculty mentor and other group members – such discussions often lead to analysis of data via the scientific method and through critical thinking. Thus, some of the best areas for growth of the students occurs in non-formal, non-graded settings. Honestly, these are the important times the student needs to succeed – since employment will be more similar to these occasions than courses.	CHEM502(0 students), CHEM510(0 students), CHEM511(0 students), CHEM512 (0 students), CHEM512L (0 students), CHEM519(0 students), CHEM519L(0 students), CHEM529(0 students), CHEM531 (0 student), CHEM578(0 students), CHEM589(0 students), CHEM592(0 students), CHEM593(0 students), CHEM595 (0 students), and CHEM599(0 students). Also, all students have had at least one committee meeting this past year.	Formal evaluations occur during courses, committee meetings and thesis defenses. Non-formal evaluations occur in regular group meetings, meetings with advisors, and in everyday laboratory interactions.	All students have shown adequate growth and are satisfactorily progressing towards graduation.	Students progressing to thesis defense.	None.
3. Biochemistry-MS students will develop and master the scientific problem solving skills required to define and solve basic or applied original scientific questions using the scientific method.	Spring 2020 by Richard Farrer.	See SLO 2.	CHEM502(0 students), CHEM510(0 students), CHEM511(0 students), CHEM512 (0 students), CHEM512L (0 students), CHEM519(0 students), CHEM519L(0 students), CHEM529(0 students), CHEM531 (0 student), CHEM578(0 students), CHEM589(0 students), CHEM592(0 students), CHEM593(0 students), CHEM595 (0 students), and CHEM599(0 students). Also, all students have had at least one committee meeting this past year.	Again, all students should complete each course with an A or B, and students should have positive reviews after each committee meeting. However, the committee meetings are also to assist misdirected students back to a path toward graduation. At the time the students choose to defend their thesis/intership, the student must be at or very near mastery of their material, and have a firm grasp on the scientific method and how to apply it to experimental design, data analysis, and production of results.	All students showing progress towards mastery of this material.	All students are currently on the thesis plan (as opposed to the internship route). The thesis plan requires students to do novel research and report their findings minimally in a thesis (but many students present work at meetings or publish their findings in peer-reviewed journals). In order to complete a thesis, significant research must be completed – and this research must follow the scientific method. Thus, students are well trained in experimental techniques, experimental design, and scientific problem solving.	None.
4. Biochemistry-MS students will actively engage in collaborative research/internships and discourse with the faculty in the Chemistry and Biology Departments and other STEM disciplines.	Spring 2020 by Richard Farrer.	CHEM592 and CHEM599 – research, CHEM598 – intership. Final assessment at thesis defense (CHEM589) or intership defense (CHEM588).	CHEM589 (0 students), CHEM592 (0 students), CHEM599 (0 students).	Students graded on CHEM599 – thesis research and CHEM588/589 defenses. All other internship/ research is pass/fail. All students should be receiving either an A or B in thesis research, and all students should be receiving satisfactory grades in S/U coursework. Students should receive A's for defenses.	All students are actively participating in research.	Students enrolled in research must actively engage in scientific research. No students on internship plan.	None.
5. Biochemistry-MS students and faculty will disseminate the products of the Biochemistry-MS program within CSU-Pueblo community and with communities outside of the university in activities using their professional expertise.	Spring 2020 by Richard Farrer.	CHEM588, CHEM589, CHEM593, CSU-Pueblo symposia, and regional and national scientific meetings. Also, publication of material in scientific journals.	CHEM589 (0 students) and CHEM593 (0 students). Graduate students presented research at regional and national meetings. Unfortunately, the CSU-Pueblo symposium was canceled.	Students are expected to receive A's for their thesis defenses. For symposia, students are expected to know the material and confidently discuss their experiments and results. This is typically the case, since faculty ensure that the material is prepared well, and the student is also prepared. Faculty spend many hourse working with students in preparation of presentations.	The symposium presentations were excellent – students were well prepared and able to provide insights into their research and results.	Students progressing toward graduation.	None.

Comments on part I:	The 2020-21 academic year saw one student graduate with an Biochemistry MS. As can be seen from the numbers, the Biochemistry MS program numbers have dwindled. Part of this was caused by the retirement of our only tenure-track biochemist, Dr. Sandra Bonetti. Our search for a new biochemist has been unfruitful, and we hope to be able to search again in Fall 2021.

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.

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?

Comments on part II:	Both Biochemistry MS students will graduate by the end of Summer 2021. One student, graduated in May 2021 and the second will complete their degree during Summer 2021. Fortunately, we have two students starting in the 3+2 Biochemistry MS program. However, we can not sustain a Biochemistry MS program if we do not hire a tenure track biochemist.