

Program: Biochemistry, M.S.

Date: May 28, 2019

Completed by: Richard Farrer

Assessment contributors (other faculty involved in this program’s assessment): none

I. Program student learning outcomes (SLOs) assessed in this cycle, processes, results, and recommendations.

A. Which of the program SLOs were assessed during this cycle? Please include the outcome(s) verbatim from the assessment plan.	B. When was this SLO last assessed? Please indicate the 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.	E. What is the expected achievement level and how many or what proportion of students should be at it?	F. What were the results of the assessment?	G. What were the department’s conclusions about student performance?	H. What changes/improvements to the program are planned based on this assessment?
1: Chemistry MS students will be able to evaluate the scientific literature and to use it in their courses and research.	Spring 2018 by Richard Farrer.	This SLO is assessed through both performance in coursework and performance during thesis committee meetings. I believe that all 500 level courses involve some evaluation of literature; however all MS students begin their coursework in	CHEM501(0 students), CHEM510(0 students), CHEM512(1 students), CHEM513(1 student), CHEM525(1 student), CHEM525L(0 students), CHEM591	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	Two active students in the Biochem MS program at this time.	Students satisfactorily progressing toward graduation.	None.

		<p>CHEM510, where students are expected to develop a thesis plan. Additionally, in CHEM593 (seminar) and CHEM589 (thesis defense), students are required to demonstrate significant knowledge of scientific literature. For students who take the internship option, CHEM588 is the internship defense. Also, students are evaluated during research credits, CHEM599 and CHEM592.</p>	<p>(0 students), CHEM578(0 students), CHEM589(1 students), CHEM592(1 student), CHEM593(1 students), and CHEM599(2 students). Also, all students have had at least one committee meeting this past year.</p>	<p>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, breadth, and scope of courses and/or research. Students must maintain a 3.0 GPA to remain in good standing in the program.</p>			
<p>2: Chemistry MS students will be able to effectively communicate scientific research, both their own and information from the</p>	<p>Spring 2018 by Richard Farrer.</p>	<p>See SLO 1. Coursework, research, and committee meetings are used to guide and direct the student toward mastery in this area, and also for purposes of</p>	<p>CHEM501(0 students), CHEM510(0 students), CHEM512(1 students), CHEM513(1 student), CHEM525(1 student),</p>	<p>Formal evaluations occur during courses, committee meetings and thesis defenses. Non-formal evaluations occur in regular</p>	<p>Satisfactory progress.</p>	<p>Students satisfactorily progressing toward graduation.</p>	<p>None.</p>

research literature, in written and oral fashions.		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.	CHEM525L(0 students), CHEM591(0 students), CHEM578(0 students), CHEM589(1 student), CHEM592(1 student), CHEM593(1 student), and CHEM599(2 students). Also, all students have had at least one committee meeting this past year.	group meetings, meetings with advisors, and in everyday laboratory interactions.			
3: Chemistry MS students will develop and master the scientific problem	Spring 2018 by Richard Farrer.	See SLO 2.	CHEM501(0 students), CHEM510(0 students), CHEM512(1 student),	Again, all students should complete each course with an A or B, and students should	Satisfactory progress	Students satisfactorily progressing toward graduation.	None.

<p>solving skills required to define and solve basic or applied original scientific questions using the scientific method</p>			<p>CHEM513(1 student), CHEM525(1 student), CHEM525L(0 students), CHEM591 (0 students), CHEM578(0 students), CHEM589(1 student), CHEM592(1 student), CHEM593(1 student), and CHEM599(2 students). Also, all students have had at least one committee meeting this past year..</p>	<p>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.</p>			
<p>4: Chemistry MS students will actively engage in collaborative research or</p>	<p>Spring 2018 by Richard Farrer.</p>	<p>CHEM592 and CHEM599 – research, CHEM598 – intership. Final assessment at thesis defense (CHEM589)</p>	<p>CHEM592(1 student), CHEM599(2 students), CHEM589(1 student).</p>	<p>Students graded on CHEM599 – thesis research and CHEM588/589 defenses. All</p>	<p>One student scheduled for thesis defense, but did not defend</p>		<p>None.</p>

internships and discourse with the faculty in the Chemistry Department and other STEM disciplines as appropriate		or intership defense (CHEM588).		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.	(currently an INC as grade)		
5: Chemistry MS students and faculty will disseminate the products of the Chemistry MS program within the CSU-Pueblo community and communities outside the university in activities using their professional expertise	Spring 2018 by Richard Farrer.	CHEM588, CHEM589, CHEM593, CSU-Pueblo symposia, and regional and national scientific meetings. Also, publication of material in scientific journals.	CHEM589(1 students) and CHEM593 (0 students). Graduate students presented their research at the University Student Symposium that was held Spring 2019 - one student	Students are expected to receive A's in their 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	Presentations at the university level at the Spring symposium.	Satisfactory progress.	None.

			presented research as this symposium.	is also prepared. Faculty spend many hours working with students in preparation of presentations.			
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During the 2017-2018 academic year, one student completed his MS degree (corrected thesis to be turned in prior to June 15<sup>th</sup>).

**II. Follow-up (closing the loop) on results and activities from previous assessment cycles. In this section, please describe actions taken during this cycle that were based on, or implemented to address, the results of assessment from previous cycles.**

A. What SLO(s) did you address? Please include the outcome(s) verbatim from the assessment plan.	B. When was this SLO last assessed? Please indicate the semester and year.	C. What were the recommendations for change from the previous assessment?	D. Were the recommendations for change acted upon? If not, why?	E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?

This assessment is based on two students that were enrolled in coursework as part of the Biochemistry MS program. We realized that the limited number of students in the program makes valid assessment difficult. However, we are determined to find a good method of assessment for the program, so that we can make necessary changes and improvements. We are looking at the current assessment of the MS Biochemistry program, and working to develop methods to improve our assessment of graduate students in the program.