

Colorado State University – Pueblo Academic Program Assessment Report for AY 2014-2015

Due: June 1, 2015

Program: ___ Chemistry, M.S. _____

Date: ___ August 12, 2015 _____

Completed by: ___ Richard Farrer _____

Assessment contributors (other faculty involved in this program's assessment): ___ none _____

Please complete this form for each undergraduate, minor, certificate, and graduate program (e.g., B.A., B.S., M.S.) in your department. Please copy any addenda (e.g., rubrics) and paste them in this document, and submit it to the dean of your college/school as per the deadline established. The dean will forward it to me as an email attachment before June 1, 2015. You'll also find the form at the assessment website at <http://www.colostate-pueblo.edu/Assessment/ResultsAndReports/Pages/default.aspx>.

Please describe the 2014-2015 assessment activities for the program in Part I. Use Column H to describe improvements planned for 2015-2016 based on the assessment process. In Part II, please describe activities engaged in during 2014-2015 designed to close-the-loop (improve the program) based on assessment activities and the information gathered in 2013-2014. Thank you.

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 <u>program</u> are planned based on this assessment?
1: Chemistry MS students will be able to evaluate the	Spring 2014 by Richard Farrer.	This SLO is assessed through both performance in	CHEM510(1 student), CHEM592(1 student),	All students should receive a grade of A	All students successfully moving toward	MS program faculty are impressed with the core group of	This was the second year that I have been the director of the program. I had met with Erin Frew

scientific literature and to use it in their courses and research.		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 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	CHEM593(0 students), CHEM589(0 students), CHEM599(2 students). Also, all students have had at least one committee meeting this past year.	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 –	graduation.	students that are currently in the MS program. Although a few students have extended their stays, most are making progress toward their degree.	on a few occasions ot discuss the changes that need to occur concerning the assessment of the Chemistry MS program. The intent was to complete these changes during the 2014-2015 academic year; however the reality was a teaching overload that did not allow for the completion of the necessary changes.
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		students who take the internship option, CHEM588 is the internship defense. Also, students are evaluated during research credits, CHEM599 and CHEM592.		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.			
2: Chemistry 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 2014 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.	CHEM510(1 student), CHEM592(1 student), CHEM593(0 students), CHEM589(0 students), CHEM599(2 students). Also, all students have had at least one committee meeting this	Formal evaluations occur during courses, committee meetings and thesis defenses. Non-formal evaluations occur in regular group meetings, meetings with	All students have shown adequate growth and are satisfactorily progressing towards graduation. One student currently below the 3.0 mark.	MS program faculty are impressed with the core group of students that are currently in the MS program. Although a few students have extended their stays, most are making progress toward their degree.	This was the second year that I have been the director of the program. I had met with Erin Frew on a few occasions ot discuss the changes that need to occur concerning the assessment of the Chemistry MS program. The intent was to complete these changes during the 2014-2015 academic year; however the reality was a teaching overload that did not allow for the completion

		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	past year.	advisors, and in everyday laboratory interactions.			of the necessary changes.
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		to succeed – since employment will be more similar to these occasions than courses.					
3: Chemistry 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 2014 by Richard Farrer.	See SLO 2.	CHEM510(1 student), CHEM592(1 student), CHEM593(0 students), CHEM589(0 students), CHEM599 (2 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	All students showing progress towards mastery of this material.	Faculty happy with student progress, for the most part. While no real concern is evident, some faculty would like to see some students become proficient at this at a faster rate. However, this material seems to be some of the most difficult for students to grasp – honestly, some doctoral students still struggle with development of a strong experimental method based on the scientific method.	See comments in Part II of this assessment. This is the first year that I have been director of the Chemistry MS Program, and I have not had time to reevaluate the assessment program that is in place. In the coming year, I will address issues that we find. However, it appears that students are successful once they graduate and find either a PhD program or employment.

				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.			
4: Chemistry MS students will actively engage in collaborative research or internships and discourse with the faculty in the Chemistry Department	Spring 2014 by Richard Farrer.	CHEM592 and CHEM599 – research, CHEM598 – internship. Final assessment at thesis defense (CHEM589) or internship defense (CHEM588).	CHEM592(1 student), CHEM599(2 students), CHEM589(0 students).	Students graded on CHEM599 – thesis research and CHEM588/589 defenses. All other internship/research is pass/fail. All	No defenses from students enrolled in CHEM589 – all incompletes – several students nearing completion.	MS program faculty are impressed with the core group of students that are currently in the MS program. Although a few students have extended their stays, most are making	See comments in Part II of this assessment. This is the first year that I have been director of the Chemistry MS Program, and I have not had time to reevaluate the assessment program that is in place. In the coming year, I will address issues that we find. However, it

and other STEM disciplines as appropriate				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 satisfactorily completed research coursework.	progress toward their degree.	appears that students are successful once they graduate and find either a PhD program or employment.
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	Spring 2014 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 their research at the RAGE Graduate Student Symposium that was held	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.	The symposium presentations were excellent – students were well prepared and able to provide insights into their research and results. One student's	Faculty were impressed with symposium presentations; One student's defense was OK.	See comments in Part II of this assessment. This is the first year that I have been director of the Chemistry MS Program, and I have not had time to reevaluate the assessment program that is in place. In the coming year, I will address issues that we find. However, it appears that students are successful once they graduate and find either a PhD program or

professional expertise			Spring 2015 – four students presented research as this symposium.	This is typically the case, since faculty ensure that the material is prepared well, and the student is also prepared. Faculty spend many hours working with students in preparation of presentation s.	defense was OK – he received a B+ for the defense – clearly we would like to have seen him perform a little better.		employment.
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During the 2015-2015 academic year, two students graduated with a MS in Chemistry. Neither of these students was enrolled in coursework in the past year. There are a couple of students that have completed the coursework and research and are in the process of writing theses. Additionally, two new 3+2 students and one full graduate student will begin in the Fall 2015 semester.

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)	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?
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verbatim from the assessment plan.				

Comments: It is my intention to update the assessment strategy of the Chemistry MS program to more align the desired outcomes with the student coursework, research, committee meetings, and defenses. Both the coursework and the research (or internship) components of the degree assist in both broadening the student's scientific knowledge and expanding the student's ability build a fundamentally solid experiment through the scientific method. While individual courses test knowledge specific to a topic, the committee meetings have the capability to ensure that a student is meeting all of the desired outcomes. Thus, I plan to update both the desired outcomes and the method by which students are evaluated during committee meetings and defenses, so as to be able to provide a better measure of the success of the program toward the student learning outcomes. I had met with Erin Frew, prior to her departure, to discuss changes that would improve the evaluation of the MS programs.