Program (Major, Minor, Core): MA (non-thesis, coursework-based degree)  
Department: Chemistry  
College/School: A&S  
Person(s) Responsible for Implementing the Plan: Scott Martin (chair) and Dana Baum (graduate program director), along with all graduate faculty mentors – Arnatt, Baum, Bracher, Buckner, Edwards, Jelliss, Kirkpatrick, Kiss, Kowert, Lewis, Martin, McCulla, Serfis, and Znosko  
Date Submitted: November 15, 2015

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<th>Program Learning Outcomes</th>
<th>Curriculum Mapping</th>
<th>Assessment Methods</th>
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<td>What do you expect all students who complete the program to know, or be able to do?</td>
<td>Where is the outcome learned/assessed (courses, internships, student teaching, clinical, etc.)?</td>
<td>How do students demonstrate their performance of the program learning outcomes? How does the program measure student performance? Distinguish your direct measures from indirect measures.</td>
<td>How does the program use assessment results to recognize success and &quot;close the loop&quot; to inform additional program improvement? How/when is this data shared, and with whom?</td>
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Students will identify the principles of modern chemistry and demonstrate their application to their particular field of interest (analytical, biochemistry, inorganic, organic or physical chemistry). Students are expected to 1) perform advanced quantitative calculations using experimental data; 2) have an advanced recognition of the physical and chemical properties of substances based on an understanding of atomic, molecular and supermolecular structure and 3) connect observations with prior information including an advanced knowledge of predicting/identifying chemical/biochemical reaction products.

Students complete a coursework sequence tailored to their field of interest and guided by their faculty mentor.

Upon completion of course requirements (normally in year 2), students undergo an oral examination.

Yearly student reviews are completed by student (self-evaluation) and mentor.

Courses are graded by faculty based upon a rubric

Oral examinations: students demonstrate knowledge by answering questions posed by faculty members who are on their committees. Questions assess student knowledge of chemistry topics covered in their coursework. After the examination, committee members discuss the student’s performance and assess if the student demonstrated knowledge that would be expected for a student at a comparable level.

Mentors give student feedback in yearly reviews that include coursework goals for the next year. These are also reviewed by the graduate program director.

Coursework offerings are evaluated every 2 years by the chair and program director by reviewing the performance on oral exams and comprehensive exams

Outcomes of oral examinations at the end of a student’s studies (positive results leading to a degree) are shared at the annual faculty retreat.

This gives the student honest feedback on their coursework performance and how they are progressing to their degree milestones.
Indirect measure: All students are interviewed at the completion of their degree program by the Graduate Program Director in order to get their perceptions on how course content has prepared them to be scientific professionals.

Indirect measure: The faculty review and discuss the exit interview responses at the annual retreat. We decide if there need to be changes made in our course content and other offerings geared towards graduate students to prepare them for their career paths.
1. **It is not recommended** to try and assess (in depth) all of the program learning outcomes every semester. It is best practice to plan out when each outcome will be assessed and focus on 1 or 2 each semester/academic year. Describe the responsibilities, timeline, and the process for implementing this assessment plan.

   Outcome #1 will be evaluated every 2 years, when the chair, graduate program director and graduate faculty evaluate the graduate course offerings in terms of their effectiveness of preparing students for the comprehensive exams and other defenses.

2. **Please explain how these assessment efforts are coordinated with Madrid (courses and/or program)?**

   The Madrid campus does not have any graduate programs in chemistry or undergraduate chemistry degree options.

3. **The program assessment plan should be developed and approved by all faculty in the department. In addition, the program assessment plan should be developed to include student input and external sources (e.g., national standards, advisory boards, employers, alumni, etc.). Describe the process through which your academic unit created this assessment plan. Include the following:**

   a. Timeline regarding when or how often this plan will be reviewed and revised. (This could be aligned with program review.)

   The coursework components of this plan will be evaluated every 2 years.

   b. How students were included in the process and/or how student input was gathered and incorporated into the assessment plan.

   A group of 5 graduate students was assembled to provide feedback on a version of the graduate assessment plan. The group consisted of two 4th year students (who are also the department representatives to the university's graduate student association), one 3rd year student, one 2nd year student, and one 1st year student. Dr. Dana Baum met with these 5 students. She first described the purpose of the assessment plan and read over the plan with the students. Dr. Baum then
asked for feedback on the plan, noting any comments and suggestions. These notes were then shared with the faculty committee working to construct the assessment plans.

c. What external sources were consulted in the development of this assessment plan?

    none

d. Assessment of the manageability of the plan in relation to departmental resources and personnel

    The plan is manageable with our current faculty and department resources.