CGEIP Report

CHM 107: Chemistry for the Citizen

1. Submitted by:

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2. What time period (e.g., FA17-SP19) is covered in this report? Were all sections of this course for each semester covered?

   SP18-SP19; all sections are accounted for in this report.

3. Did you have a meeting with other course instructors to discuss data collected? Who participated in the discussions?

   The three instructors for CHM 107, Prof. Helena Metzker, Dr. Mark Richter, and I met in preparation for this report.

   Reviewer Comment:
   Nice work getting instructors together to discuss the course and assessment outcomes.

4. General Goal

   General Goal 1: Students will understand and actively explore fundamental principles in phusical sciences and methods of developing and testing hypoteses used in the analysis of the phsyical universe.

5. What did you want students to learn that supported the General Goal(s)? List specific learning outcomes (typically three distinct outcomes unless another number was specified) supporting the goal. For each of these, describe the type of data you collected. (Be specific, e.g., evaluated essays to gauge students' ability to view a problem from multiple perspectives…; evaluated short answers responses to determine whether students could identify reliable sources…). What did you learn about student learning for each of these?

The 3 big-picture, take-home messages we want students to take away from this course are: 1.) The relationship between structure of individual particles (atoms and/or molecules) and observable, bulk chemical and physical properties; 2.) The nature of scientific facts and the processes by which they are established, especially their reliance on evidence, their tentativeness, and their relationship to scientific models; 3.) The interpretation of data and other observable evidence and grounding those interpretations to scientific models and theoretical constructs.

Due to the large class sizes and other logistical factors almost all of the assessments are through multiple-choice exams. Each instructor dedicates a number of items in these assessments to each of these goals. The specific proportion depends on the instructor and on the exam. The results of these assessments are discussed in the next section.

Reviewer Comment:
Great set of clear goals for the course! If all instructors are performing different assessments of your course goals, how are those cohesively evaluated? How do you determine "success" of an individual goal? I'm not sure I understand how this assessment process is being operationalized and collated across courses.

6. Overall, how would you rate the student's achievements/progress relative to the General Goal(s)? Where have students shown the most success? Have you noted any areas of weakness in student learning relative to the General Goal(s)?

Across all sections and instructors, students seem to perform the best in assessment items related to data interpretation (Goal 3). They seem to struggle the most with understanding the modeling nature of science (Goal 2).

Reviewer Comment:
Thanks for indicating the goal with the items. How are they doing with Goal 1? When you say they perform the "best" in assessment items related to Goal 3, do you mean compared to Goals 1 and 2? Is there improvement over the course? Pre- and post-measures.

7. What do you plan to do in the future? What worked well and will be continued? If you noted any deficiencies, how do you anticipate addressing them?

Prof. Metzker is planning on adding some demonstrations or other visualization activities to her course. All three instructors plan to incorporate some common questions on the final exam to see how general goals are met across sections and instructors.

Reviewer Comment:
What goals will these visualization activities and demonstrations help with? Goal 2? This is an excellent idea!

8. Faculty senate has charged CGEIP with examining the diversity content in all general education courses. Please describe any ways that you include diversity content in your general education course (if applicable):

   All of the instructors stress interpreting data from a global perspective, in that a solution that may work in Missouri may not be optimal for other parts of the country and the world. One example all of us use is the affects that generating corn ethanol had on global food prices. All instructors also show information from a variety of sources covering a multitude of points of view.

   Reviewer Comment:
   That's an interesting example of how chemistry-related content can vary!

9. Optional: If you used a rubric or other assessment tool for your evaluations and felt that it was particularly effective, please attach that. CGEIP may post (or otherwise make available) assessment tools that might serve as models for coordinators of other general education courses.

   N/A

10. Have you received data or other feedback from dual credit sections of the course (if applicable) regarding the general education components in these classes? If so, please describe this.

    There are no dual credit sections of this course.