

Course Outcomes Guide (COG)

Directions: Please complete this form to document your progress toward improving student learning. For each item, indicate your progress and your anticipated next steps. Thank you!

Course Title: CHM 104

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Course Team: Veronica Stein, Melissa Chang

Expected Learning Outcomes

1. Apply quantitative thinking processes and reasoning skills to core content of courses.
2. Communicate core course concepts in writing while using appropriate technology.
3. Collect, analyze, and evaluate empirical data to substantiate chemical concepts.
4. Apply course content to environmental issues (e.g., pollution, global warming, and toxicology).
5. Apply quantitative thinking processes and reasoning skills to core content of the second semester of general chemistry.
6. Solve quantitative chemistry problems and demonstrate reasoning clearly and completely. Integrate multiple ideas in the problem solving process. Check results to make sure they are physically reasonable.
7. Relate chemical concepts to real life scenarios.

Assessment (How do or will students demonstrate achievement of each outcome? Please attach a copy of your assessment electronically.)

A Nationalized Final Exam written by the American Chemical Society (ACS) for the second semester of General Chemistry is used as the final exam for CHM 104.

Validation (What methods have you used or will you use to validate your assessment?)

We compare our students to the national average of the ACS exam.

Results (What do your assessment data show? If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?)

For the 2002 version of the ACS exam, each year the students improved their scores on the final exam in general. We updated the exam to the latest version offered by the American Chemical Society. The newer version has ten fewer questions and they do not ask questions

on the topics of organic chemistry or properties of various elemental groups. This is an improvement, since I have not been able to cover the chapters on elemental groups.

CHM 104			
Semester	n	mean	
06/SP	30	30.8	
06/FA	8	27.6	
07/SP	18	44.5	
07/FA	16	32.3	
08/SP	25	38.92	
08/FA	11	33.18	
09/SP	28	40.04	
09/FA	16	41.3	
10/SP	35	42.8	
10/FA	9	40.3	
11/SP	30	45.2	
11/FA	17	45.8	
<i>National 2002 version</i>	<i>1321 From 17 colleges</i>	<i>39.09</i>	<i>out of 80 questions</i>

CHM 104			
Semester	n	mean	
12/SP	20	41.2	
<i>National 2010 version</i>	<i>TBA From colleges</i>	<i>TBA</i>	<i>out of 70 questions</i>

Follow-up (How have you used or how will you use the data to improve student learning?)

The ACS is still collecting data on the 2010 version of this exam, so the national mean is currently not available.

In addition to determining the average, we perform an item analysis on the questions.

From the item analysis, topic areas which are weak are determined and address in changing lecture material or lab experiments to better cover that concept.

Budget Justification (What resources are necessary to improve student learning?)

The newest version of the ACS exam for 2nd semester general chemistry was purchased and used for the first time in the Spring 2012 CHM 104 course.