

## Course Outcomes Guide

**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/Program Title:** CHM 203 **Date:** May 2016  
**Organic Chemistry 1**  
**Course/Program Team:** Nancy Thorpe

### Expected Learning Outcomes

1. Apply both quantitative and qualitative thinking processes and reasoning skills to core content for organic chemistry.
2. Communicate organic chemistry concepts in writing and by use of appropriate technology and proper terminology and nomenclature to both scientists and non-scientists (e.g. maintain a laboratory notebook).
3. Collect, analyze, and evaluate empirical data to substantiate chemical concepts.
4. Apply course content to environmental and health-related issues (e.g., pollution, global warming, toxicology, pharmacology, environmental health).

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

1. In-class exams with combination of multiple-choice, short answer, problem solving and essay.
2. Formal written laboratory reports with a grading rubric.
3. Written laboratory mid-term and final exams.
4. Research papers on environmental and human health issues.
5. American Chemical Society (ACS) standardized final exam **for the first semester only.**

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

The ACS exams are nationally normalized exams. I use the 1<sup>st</sup> semester exam for CHM203 in the fall semester.

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

I have been implementing the ACS exam and collecting data since Fall '09. Please see attached results. Starting in Fall '12 this course has been taught as a hybrid course and the results on the ACS exam are much improved, as well as the overall class average. Grades seem to be fairly consistent over the past few years.

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

Overall, the course statistics remain about the same, the results of the ACS exam have improved each semester with retention and success rate about the same for the online course. We continue to use all the instrumentation, NMR spectrophotometer, FT-IR, and gas chromatograph which will enhance our students' technology-based learning. Additional training for staff and faculty will be needed to ensure proper use and educational learning. We will continue to use the 1-semester ACS final exam. I am adopting a new textbook (McGraw-Hill) that has more online

features and hopefully, a better online homework system that will improve students' performance in the course.

**Budget Justification** (What resources are necessary to improve student learning?)  
Money for GC and NMR training is also requested.

**Course: CHM 203**
**SLOA Data**
**Faculty Team: N. Thorpe**

	FA 2009	FA 2010	FA 2011	***FA 2012	FA 2013	FA 2014	FA 2015	
# Active students	10	15	16	12	7	14	12	
%W	0	13.3	6.3	25	30	0	1	
*% walk-away Fs No final exam/grade = F	0	0	6.3	0	14	0	1	
% Success (A,B,C)	80	92.3	86.7	75.0	72.0	100	85	
Mean Lab Exam Score			74.9	83.7	78.6	78.2	82.2	
**Common Comprehensive Final Exam Score (out of 70)	35.70	36.17	36.00	41.0	40.6	39.0	38.0	
Mean course grade	77.6	79.73	80.57	81.2	80.3	80.8	79.3	
Item Analysis <b>Weakest Content Areas</b>							****	

\*% Walk-away Fs = Did not take the final exam and received a grade of F.

\*\*ACS 1<sup>st</sup> semester organic chemistry exam given. National mean: 38.61/70

\*\*\*Course taught as hybrid for the first time.

**Content Areas**

\*\*\*\*Stereochemistry, reaction mechanisms, nomenclature, and reaction products.