Program Level Outcome (PLO) Assessment Report Summary

Program Level Outcomes for Chemistry:

Upon successful completion of the Chemistry program, a student should be able to:

1. apply appropriate chemical theories, concepts, principles, methods, and laboratory skills to relevant science and engineering settings.
2. demonstrate competence in chemistry laboratory techniques and experimental methods.

What we looked at:

We focused on PLO 2: demonstrate competence in chemistry laboratory techniques and experimental methods. We assessed the degree of competence of chemistry students in basic chemistry lab skills, experimental methods, and laboratory techniques for CHM 12A Organic Chemistry I students. These students are at the sophomore level and have taken at least three previous chemistry classes with a laboratory component. We analyzed student lab skills in various lab activities. Part of the analysis was based on an end-of-the-semester survey.

What we found:

In Fall 2013, CHM 12A students demonstrated good proficiency in basic laboratory skills used in organic chemistry. These skills include microscale technique, distillation, extraction, and structure characterization.

35% (9 out of 26) students evaluated their lab technique as excellent in a semester end survey.

The remaining students (17 out of 26) evaluated their lab technique as good.

These results suggest our chemistry instructors in CHM 22, CHM 1A, and CHM 1B do an excellent job to prepare these students for CHM 12A organic lab techniques. In the CHM 12A lab, we found that reviewing and using the same techniques in multiple lab activities reinforces student learning.

What our next steps are:

We will continue to use group work in chemistry lab activities. Students collaborate and learn chemistry content and lab skills in group work.

Although students are able to perform the lab techniques competently, their understanding of the underlying principles can be improved with additional lecture to reinforce the concept of each lab technique.