SAINT LOUIS UNIVERSITY

Program Assessment: *Annual Report*

Program(s): BS Chemistry

Department: Chemistry

College/School: A&S

Date: June 24, 2019

Primary Assessment Contact: Brent M. Znosko

1. Which program student learning outcomes were assessed in this annual assessment cycle?

Year 2 assessment focuses on components of lab courses that are used as a measure of student learning. The following program student learning outcomes were assessed in this annual assessment cycle (Year 2):

#2 – Demonstrate proficiency of basic (general, physical, and inorganic) laboratory techniques and advanced (organic and analytical) laboratory techniques and conduct laboratory experiments safely (a, c, e, g, and h in assessment plan).

#3 – Collect, interpret, and analyze quantitative data (c, e, and f in assessment plan).

#4 - Communicate scientific results effectively, especially through written reports and oral presentations (a, b, d, and f in assessment plan)

2. What data/artifacts of student learning were collected for each assessed outcome? Were Madrid student artifacts included?

Data collected includes:

Outcome #2 – Score on safety exam in General Chemistry 1&2, scoring rubric for Gen Chem 2 lab Boiling Point Elevation, semester score in Physical Chemistry Lab, score on safety exam in Orgo 1&2 Lab, scoring rubric (technique points section) for Orgo 2 lab (Lab 7: E1/E2 elimination), semester score in Analytical 1 Lab, and score on grading rubric in Inorganic Lab (ferrocene lab).

Outcome #3 – Semester score in Analytical 1 Lab, rubric (data analysis) for Analytical 2 Lab (spectroscopy lab), grading rubric for Inorganic Lab (report and computational work sections for ferrocene lab), and semester score for Physical Chemistry Lab.

Outcome #4 – Presentation in Orgo 1 Lab (rubric), overall score on rubric for Analytical 2 Lab (spectroscopy lab), semester score for Physical Chemistry Lab, and overall score on rubric in Inorganic Lab (ferrocene lab).

Data from Madrid was not collected. Only general chemistry and organic chemistry are offered in Madrid. Very few chemistry and biochemistry majors take these courses in Madrid.

3. How did you analyze the assessment data? What was the process? Who was involved?
NOTE: If you used rubrics as part of your analysis, please include them in an appendix.

Scores were sent from the course instructor to the assessment committee. Raw scores were

analyzed and converted to percentage of students who exceeded, met, approached, or did not meet the outcome. This analysis was shared with the assessment committee and the instructors of the courses involved. The analysis will be discussed with the entire faculty at the departmental retreat in August. During the retreat, each division will meet as a group to discuss the assessment data and possible recommendations for changes in pedagogy, curriculum design, or the assessment plan.

4. What did you learn from the data? Summarize the major findings of your analysis for each assessed outcome.
   NOTE: If necessary, include any tables, charts, or graphs in an appendix.

Outcome #2 – On the general and organic chemistry lab safety exams, 97% of the majors met the learning outcome. On the general chemistry scoring rubric, 94% of the majors exceeded, met, or approached the learning outcome. In physical chemistry lab, 87% of the majors exceeded, met, or approached the learning outcome. On the organic chemistry scoring rubric and in analytical 1 lab, 100% of the majors exceeded, met, or approached the learning outcome.

Outcome #3 – In analytical 1 lab and on the analytical 2 rubric, 100% of the majors exceeded, met, or approached the learning outcome. In inorganic lab, 94% of the majors exceeded, met, or approached the learning outcome. In physical chemistry lab, 87% of the majors exceeded, met, or approached the learning outcome.

Outcome #4 – On the organic lab presentation and rubric for analytical 2, 100% of the majors exceeded, met, or approached the learning outcome. In physical chemistry lab, 87% of the majors exceeded, met, or approached the learning outcome. In inorganic lab, 94% of the majors exceeded, met, or approached the learning outcome.

It should be noted that small sample sizes (sometimes as few as five students) may be skewing the results. More meaningful results will likely require data from several years.

5. How did your analysis inform meaningful change? How did you *use the analyzed data to make or implement recommendations for change* in pedagogy, curriculum design, or your assessment plan?

Since this is only our second year collecting data and our first time analyzing these specific learning outcomes, our sample size isn't large enough to make meaningful recommendations for change. It should also be noted that we will have a high turnover in the faculty who will be responsible for teaching labs next year, making pedagogical and curricular changes difficult. We will also discuss our assessment data, this assessment report, and recommendations for change at our departmental retreat in August. We will meet by division, and it is likely that additional recommendations will result from those conversations.

6. Did you follow up ("close the loop") on past assessment work? If so, what did you learn? *(For example, has that curriculum change you made two years ago manifested in improved student learning today, as evidenced in your recent assessment data and analysis?)*

Since this is our first time collecting data to assess these student learning outcomes, there is no relevant past assessment work.

IMPORTANT: Please submit any revised/updated assessment plans to the University Assessment Coordinator along with this report.