SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program: BS Biochemistry	Department: Chemistry
Degree or Certificate Level: Undergraduate	College/School: A&S
Date (Month/Year): June 2020	Primary Assessment Contact: Brent Znosko
In what year was the data upon which this report is based collected? 2018-present	
In what year was the program's assessment plan most recently reviewed/updated? 2018	

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle?

Year 3 assessment focuses on components of research that are used as a measure of student learning. The following program student learning outcomes were assessed in this annual assessment cycle (Year 3):

#4 - Communicate scientific results effectively, especially through written reports and oral presentations (c and e in assessment plan)

#5 – Design and conduct independent research

2. Assessment Methods: Student Artifacts

Which student artifacts were used to determine if students achieved this outcome? Please identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

Data collected includes:

Outcome #4 – Score on presentation in CHEM 3100: The Chemical Literature (rubric) and written communication VALUE rubric for the undergraduate thesis completed as part of CHEM 3970: Undergraduate Research.

Outcome #5 – Inquiry and analysis VALUE rubric for undergraduate research experience completed as CHEM 3970: Undergraduate Research.

Both of the relevant courses are typically offered in-person. Data from Madrid was not collected. Only general chemistry and organic chemistry are offered in Madrid. Research experiences are not offered in Madrid.

3. Assessment Methods: Evaluation Process

What process was used to evaluate the student artifacts, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and include them in/with this report.

Scores were sent from the course instructor or research mentor to the assessment committee. For Chemical Literature, scores were analyzed and converted to percentage of students who exceeded, met, approached, or did not meet the outcome. For the VALUE rubrics, a student's score on each of the 10 categories was averaged to give an overall score. These scores were analyzed and converted to percentage of students who mastered, met, or need development. This analysis was shared with the assessment committee and the instructors of the courses involved.

4. Data/Results

What were the results of the assessment of the learning outcomes? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

Outcome #4 – On the Chemical Literature presentation, 89% of the students met, exceeded, or approached the

learning outcome. On the VALUE rubric for the thesis, 100% of the students mastered or met the learning outcome.

Outcome #5 – On the VALUE rubric for the undergraduate research experience, 100% of the students mastered or met the learning outcome.

It should be noted that small sample sizes (sometimes as few as 16 students) may be skewing the results. More meaningful results will likely require data from several years.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

Outcome #4 – The instructors and students are doing well in Chemical Literature and on the undergraduate thesis. For the thesis, the lowest rated component was the Conclusion section. Perhaps our students need more guidance interpreting their results and/or writing this section of the thesis.

Outcome #5 – Overall, the instructors and students are doing well throughout the entire undergraduate research experience, as 100% of the students were mastering or meeting the learning outcome. The lowest rated component was knowledge base.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

The analysis will be discussed with the entire faculty at an upcoming faculty meeting (a departmental retreat will not be held this summer). During the meeting, faculty will discuss the assessment data and possible recommendations for changes in pedagogy, curriculum design, or the assessment plan.

B. How specifically have you decided to use findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	• Course content • Teaching techniques • Improvements in technology • Prerequisites	• Course sequence • New courses • Deletion of courses • Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	• Student learning outcomes • Student artifacts collected • Evaluation process	• Evaluation tools (e.g., rubrics) • Data collection methods • Frequency of data collection

Please describe the actions you are taking as a result of the findings.

Since this is only our third 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 it is difficult to interpret and recommend changes for undergraduate research. Since each student's project and PI is different, each student's undergraduate research experience is unique, making uniform change difficult. Also, the rubrics used to collect the data were completed by the various PIs, making interpretation difficult.

If no changes are being made, please explain why.

We will discuss possible changes at an upcoming faculty meeting. However, it is likely that changes would be instituted by individual instructors based on the results of this report but, more likely, by the results of that particular instructor's research students.

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

At this point, reviewing of previous assessment findings and changes is not meaningful. Because our assessment plan is on a three-year cycle and this is Year 3, (1) changes have only been implemented for less than two years (very little data before the change and very little data after the change) and (2) the corresponding learning outcomes will not be re-assessed until next year at the earliest. Beginning with next year's report, we will be able to start assessing changes made after Year 1.

B. How has this change/have these changes been assessed?

See #7A above.

C. What were the findings of the assessment?

See #7A above.

D. How do you plan to (continue to) use this information moving forward?

See #7A above.

IMPORTANT: Please submit any assessment tools and/or revised/updated assessment plans along with this report.