SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program Name (no acronyms): Chemical Biology	Department: Chemistry
Degree or Certificate Level: MS	College/School: College of Arts & Sciences
Date (Month/Year): August 2023	Assessment Contact: Chris Arnatt

In what year was the data upon which this report is based collected? 2022-2023

In what year was the program's assessment plan most recently reviewed/updated? New program approved in 2018,

Program assessment feedback 2023

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

SLU graduates with a MS degree in Chemical Biology will be able to:

Outcome 1: Assess relevant literature in chemical biology

Outcome 2: Apply the major practices, theories, or research methodologies in chemical biology.

Outcome 3: Apply chemistry principles to biology.

Outcome 4: Articulate arguments or explanations in both oral and written forms.

Outcome 5: Evidence scholarly and professional integrity in chemical biology.

Learning outcomes highlighted in **BOLD font** were assessed in this annual cycle.

This is the third year for the program. In Year 1, learning outcomes 1 (course-based assessment only) and 3 were evaluated. However, due to the fact that only 1 student has defended their Thesis since the program started and the inability to fully evaluate Year 1 outcomes due to impacts by COVID-19 and the biannual offering of CHEB-5630, Outcomes 1 and 3 were re-evaluated in Year 2. *In Year 3, outcomes 2 and 4 were evaluated.* **In Year 4, outcomes 1 (thesis-based assessment only) and 5 will be evaluated.**

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe and 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.

For **Outcome 1**, performance on a class project/presentation was collected. Assessment data was in the form of a rubric from the course instructor. For this outcome, both courses had multiple students enrolled, CHEM 5470 Medicinal Chemistry, and CHEB-5630 . Two students in the ABM program defended theses this year cycle.

For **Outcome 3**, final cumulative exam score and exam average in CHEB-5630 and CHEM-4470 was used for this assessment.

Madrid does not have a graduate program in Chemical Biology.
No courses in this assessment were offered online or off-campus

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (do not just refer to the assessment plan).

> Data was collected by mentors and is summarized on the attached spreadsheet. The rubrics used for source data are attached as well.
>
> Data was analyzed by the Chemical Biology Program Coordinator and reported to department faculty for feedback.

4. **Data/Results**

   What were the results of the assessment of the learning outcome(s)? 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)?

> For Outcome 1: 4 of 6 students exceeded expectations and 2 of 6 students met expectations on the CHEB 5630 literature presentation. 5 of 5 students exceeded expectations on the CHEM 5470 research paper rubric. For the MS thesis rubric, 1 of 2 students exceeded expectation and 1 of 2 students met expectations on the "background knowledge" section.
>
> For Outcome 3: 3 of 5 students exceeded expectations and 2 of 5 students met expectations on the CHEM 5470 final exam score. 1 of 6 students exceeded expectations and 5 of 6 students met expectations on the CHEB 5630 final cumulative exam score.
>
> It should be noted that this is the forth year of the program and the number of MS students is small, which may skew the results.

5. **Findings: Interpretations & Conclusions**

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

> Based on our analysis, our MS students are meeting or exceeding expectations.

6. **Closing the Loop: Dissemination and Use of <u>Current</u> Assessment Findings**

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

   > The results of the assessment were shared with the full faculty via email. The collection and analysis of the data was completed just prior to finalizing this report. The data and the first draft of this report was shared with the instructors of the courses related to the above outcomes.

   B. How specifically have you decided to use these 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 • Artifacts of student learning • 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 these findings.

   > This is our second time assessing these outcomes using these metrics. No changes are being made with respect to these two outcomes.

   If no changes are being made, please explain why.

There are no major concerns since all of our students are meeting or exceeding expectations.

7. **Closing the Loop: Review of <u>Previous</u> Assessment Findings and Changes**
   A. What is at least one change your program has implemented in recent years as a result of assessment data?

   B. No specific changes to the program have been made as this is only the third year of the program.

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

   n/a

   D. What were the findings of the assessment?

   n/a

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

   All data will be collected annually so that we can assess larger sample sizes (3 years' worth of data) in the coming years when the outcome(s) are scheduled for review.

IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.

Course Performance - MS Students
Academic Year 2022-2023
Program Year 4

Assessment Cycle: Year 3

Year 1: Learning outcomes 1 (course-based) and 3

Year 2: Learning outcomes 2 and 4

Year 3: Learning outcomes 5 and 1 (thesis-based)

Year 4: Learhing outcomes 1 (course-based) and 3

Outcome 1: Assess relevant literature in chemical biology							
Data Source	>90% - Exceeds Expectations (Rubric 4 = Excellent)	70 - 89% - Meets Expectations (Rubric 3 = Good)	65 - 69% - Approaching Expectations (Rubric 2 = Fair)	<65% - Not meeting expectations (Rubric 1 = Poor)	Total	Assessment	Notes
CHEB 5630 rubric for literature presenation	4	2			6		Points earned for "Content" and "Questions" were summed and converted to % of possible points from rubrics for each student
CHEM 5470 rubric for research paper and presentation	5				5		% of points earned for course rubric for research paper and presentation
MS Thesis rubric: "Background Knowledge"	1	1			2		

Outcome 3: Apply chemistry principles to biology.							
Data Source	>90% - Exceeds Expectations	70 - 89% - Meets Expectations	65 - 69% - Approaching Expectations	<65% - Not meeting expectations	Total		Notes
CHEB 5630 final cumulative exam score	1	5			6		Course is only offered every even year in the fall so all 5 students in the program took the course Fall 2020. Final exam is cumulative
CHEM 5470 exam average	3	2			5		Combined data from Spring 2020 and Spring 2021. Average of all exams in the course (there is no cumulative exam)