SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program: Chemical Biology & Pharmacology	Department: Chemistry
Degree or Certificate Level: BS	College/School: Arts & Sciences
Date (Month/Year): June 2020	Primary Assessment Contact: Marvin Meyers

In what year was the data upon which this report is based collected? 2019-2020

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

1. Student Learning Outcomes

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

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

SLU graduates with a BS degree in Chemical Biology & Pharmacology will be able to:

1. **Explain major principles in organic chemistry, biochemistry, and pharmacology**
2. **Conduct laboratory techniques and experiments safely**
3. Analyze quantitative data
4. Apply chemistry principles to biology
5. Articulate scientific results in both oral and written forms

This is the first year for the program. In Year 1, learning outcomes 1 and 2 are evaluated. In Year 2, outcomes 3 and 4 are evaluated. In Year 3, outcome 5 is evaluated.

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.

For **Outcome 1**, ACS standardized organic chemistry and biochemistry exams are normally used to assess (CHEM 2440 and CHEM 4620). In addition, select exam questions (written) CHEM-4470 and PPY-4410 are normally to be used to gauge student mastery of this outcome. Due to course modifications due to moving online with the COVID-19 situation, no ACS standardized exams could be given and CHEM-4470 did not utilize short answer questions on the final exam. PPY-4410 was not offered this year.

For **Outcome 2**, the results from a safety quiz normally given in CHEM 2445 (organic chemistry 2) were replaced with results from CHEM 2435 (organic chemistry 1) to due COVID-19. Lab notebooks from CHEM 4625 (biochem lab 2) were used. In addition a rubric for CHEB 3970 (undergrad research) would normally be used but the first students enrolled in this course were this spring semester when COVID-19 hit and thus was not assessed.

Madrid does not have a program in Chemical Biology.
No courses in this assessment were offered online or off-campus. The exception to this was due to the mid-semester Spring 2020 modification to all courses to an online form due to COVID-19.

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.

Data was collected by course instructors and is summarized on the attached spreadsheet.

Data was provided to Department's Assessment Committee.

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)?

For Outcome 1: No assessments could be made due to impact of COVID-19.

For Outcome 2: 13 of 13 students exceeded expectations (>90%) on the CHEM 2435 and CHEM 4625 lab techniques and safety data.

It should be noted that this is the first year of the program and challenges due to COVID-19 significantly hampered the ability to collect data.

5. Findings: Interpretations & Conclusions

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

Based on our analysis, our BS students are exceeding expectations, although we were limited in our assessment this year due to course offerings and limited data collection due to COVID-19.

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?

This is our first year assessing these outcomes using these metrics. The results of the assessment will be shared with the full faculty during our annual department retreat later this summer. Additional actions may be proposed at that point.

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.

This is our first year assessing these outcomes using these metrics. Upon approval of the Chemical Biology Program, specific learning outcomes and assessments were approved but not all rubrics have been developed yet. Challenges faced due to the COVID-19 situation delayed developing all of the rubrics. We will be working developing these rubrics to over the upcoming year.

If no changes are being made, please explain why.

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?

N/A – this is the first year of the program.

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

C. What were the findings of the assessment?

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

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

Course Performance - BS Students
Academic Year 2019-2020
Program Year 1

Assessment Cycle: Year 1
Year 1: Learning outcomes 1 and 2
Year 2: Learning outcomes 3 and 4
Year 3: Learning outcome 5

Outcome 1: Explain major principles in organic chemistry, biochemistry, and pharmacology							
Data Source	>90% - Exceeds Expectations	70 - 89% - Meets Expectations	65 - 69% - Approaching Expectations	<65% - Not meeting expectations	Total	Assessement	Notes
CHEM 2440 Organic Chem						ACS standardized exam	Due to COVID-19 ACS standardized exams were not available
CHEM 4620 Biochemistry						ACS standardized exam	Due to COVID-19 ACS standardized exams were not available
CHEM 4470 Med Chem						Select exam questions	Due to COVID-19 course was modified to only multiple choice this year so appropriate short answer questions were not developed to assess
PPY 4410 Molec Pharm						Select exam questions	New course not offered this year

Outcome 2: Conduct laboratory techniques and experiments safely							
Data Source	>90% - Exceeds Expectations	70 - 89% - Meets Expectations	65 - 69% - Approaching Expectations	<65% - Not meeting expectations	Total		Notes
CHEM 2445 Org Chem 2 Lab	11				11	rubric	Due to COVID-19, used CHEM 2435 Org Chem 1 Lab data
CHEM 4625 Biochem 2 Lab	2				2	rubric	
CHEB 3970 Undergrad Research						rubric	Data not collected due to COVID-19

Outcome 3: Analyze quantitative data							
Data Source	>90% - Exceeds Expectations	70 - 89% - Meets Expectations	65 - 69% - Approaching Expectations	<65% - Not meeting expectations	Total		Notes
CHEM 2200 Anal Chem						ACS standardized exam	
CHEM 2205 Anal Chem Lab						ACS standardized exam	
CHEM 3970 Undergrad Research						rubric	

Outcome 4: Apply chemistry principles to biology							
Data Source	>90% - Exceeds Expectations	70 - 89% - Meets Expectations	65 - 69% - Approaching Expectations	<65% - Not meeting expectations	Total		Notes
CHEM 4470 Med Chem						Select exam questions	
CHEM 3970 Undergrad Research						rubric	

Outcome 5: Articulate scientific results in both oral and written forms.							
Data Source	>90% - Exceeds Expectations	70 - 89% - Meets Expectations	65 - 69% - Approaching Expectations	<65% - Not meeting expectations	Total		Notes
CHEM 3970 Undergrad Research						rubric	
Senior Thesis						rubric	
Senior Poster						rubric	