SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program: Bioinformatics & Computational Biology	Department: CS/Math&Stats/Biology/Chemistry
Degree or Certificate Level: M.S.	College/School: Arts & Sciences
Date (Month/Year): 09/2021	Primary Assessment Contact: Maureen Donlin
In what year was the data upon which this report is based collected? 2020-2021	
In what year was the program's assessment plan most recently reviewed/updated? 2020	

1. Student Learning Outcomes

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

We focused on assessing the following SLOs this year
1) Work as part of multidisciplinary teams in corporate or academic environments
2) Effectively communicate research approaches and findings.

2. Assessment Methods: Artifacts of Student Learning

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

We continued to collect reflections from the student internship experiences. We also tracked published research manuscripts, poster and oral presentations made by the students at research meetings. We evaluated and provided feedback on oral presentations during the required colloquium. We added a program survey that was sent to all current students as well as graduates of the program. We received a 76% response rate on this survey.

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.

SLO 1 is evaluated based on their research mentors survey as well as reports from the internship advisors. We have attached the reflection and internship advisor surveys. We maintain contact with our alumni and periodically survey them for their reflections on how the degree training has helped them develop the skills necessary to work as part of a multi-disciplinary team and what course work might have helped them transition to their current position more easily.

SLO 2 is evaluated as part of the colloquium in which the students make an oral presentation during their second year. Several students have made presentations at the SLU GSA symposium or have attended professional meetings in which they have made presentations.

SLO1 and 2 were evaluated as part of a survey of all current and past students to evaluate their thoughts on multiple aspects of the program.

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)?

Our assessment of SLO 1 was based primarily on answers to the internship reflections. Most students this year state that the courses prepared them well. On recurring theme is a request for more unix experience. Also, many students are frustrated by the inability to get into the machine learning course due to it being offered only once per year and being very popular with all CS students.

SLO2 is assessed using the grading of student presentations during colloquium. All students participating in that course passed with no issues.

SLO2 was assessed in our survey with two open-ended questions about the colloquium. Most were highly supportive of the course. Many would like more diverse speakers, particularly more from industry. Most would like additional opportunities to present their work.

5. Findings: Interpretations & Conclusions

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

Some first year students still find it stressful to find internships and we continue to seek ways to ease that process.

We need to expand the number of computer science course sections so that very relevant course topics, such as machine learning, can be offered in both semesters.

We need to offer more biology electives.

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?

Faculty teaching the courses that are over-subscribed communicate to the director when students are placed on a wait list or are unable to join the course.

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.

For SLO1, we added a zoom meeting during the orientation in which alumni of the program met with the incoming students to share their experiences and answer questions about the program.

For SLO2:

1) We will focus on diversifying the speakers in next year's colloquium.
2) We try to alert students by email when there are other seminars on bioinformatics related topics.
3) We plan to hold another joint meeting with the Danforth center this year, assuming the pandemic regulations allow for an in-person gathering.

If no changes are being made, please explain why.

Unless CS can hire more faculty, we are unable to offer courses more frequently as faculty with the appropriate expertise are at their workload limits.

Biology assigned two BCB faculty to teach genetics, an undergraduate only course. This resulted in two graduate level biology courses that are BCB electives being dropped from the course offerings. Until more faculty are hired in biology, it is not clear that we can add any additional biology elective courses.

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?

We have set aside an afternoon during our new student orientation for presentations by researchers both within and outside SLU who have hosted or are willing to host BCB interns. This introduces the students to the different areas of bioinformatics and helps them identify potential internships.

We have created a shared google drive called "BCB_student_resources" where we post internship and job opportunities. We also post these opportunities on a shared Slack channel.

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

We have assessed this by surveying the students and asking if they found this to be useful.
Tracking enrollment by BCB students in new elective courses.

C. What were the findings of the assessment?

Greater than 80% of the students liked the afternoon of presentations, although some found it to be a bit overwhelming.
We are seeing BCB students enrolling in the new electives.

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

We will continue to include outside presenters during our new student orientation but are encouraging presenters to keep presentations less than 15 minutes and to reduce the amount of detail included.

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