SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program Name (no acronyms): BS in Biostatistics	Department: Undergraduate Public Health Programs
Degree or Certificate Level: BS	College/School: CPHSJ
Date (Month/Year): Dec 2022	Assessment Contact: Lauren Arnold
In what year was the data upon which this report is based collected? AY2021-2022	
In what year was the program's assessment plan most recently reviewed/updated? 2022	
Is this program accredited by an external program/disciplinary/specialized accrediting organization? Yes - CEPH	

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.)

This assessment cycle focused on LOs 1, 2, 3, and 4:
LO1: Perform computations, derivations and calculations as they relate to calculus and linear algebra.
LO2: Use standard statistical software to create and manage datasets and perform basic statistical tests
LO3: Appropriately communicate statistical results.
LO4: Apply the public health model to biostatistical work.

All PLOs were assessed as we are in the process of our CEPH self-study in preparation for our CEPH re-accreditation visit in April 2023.

2. **Assessment Methods: Artifacts of Student Learning**
   Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe the artifacts in detail and identify the course(s) in which they were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

All PLOs were assessed using data from the Capstone project in BST4400. This course is an in-person course only offered on the St. Louis 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** (please do not just refer to the assessment plan).

BST4400 data: Consistent with the evaluation protocol used in past years, the rubric developed by the BST4400 instructor mapped LOs to Capstone project elements, which in turn mapped to specific biostatistical skills. The following rubric is used:

- 1.5 = Student demonstrated understanding of LO at advanced level (>100% of skills demonstrated)
- 1 = Student demonstrated understanding of LO at a basic level (70-100% of skills demonstrated)
- 0 = Student did not demonstrate understanding of LO (<70% of skills demonstrated)

As LO2 and LO4 mapped to multiple skills, a "coverage" score and "coverage %" were calculated; the percentage mapped back to the LO achievement scale outlined above. (Coverage score of 100% = "1"; < 100% = "0"; >100% = "1.5".) e.g.:

- $LO2_{coverage}$ = Import, export, transfer data among databases and software (4 assessments) + manage, manipulate, transform, recode datasets (3 assessments)
- $LO2_{percentage}$ = ($LO2_{coverage}$ / 7) * 100
- $LO4_{coverage}$ = Find and use national level data (1 assessment) + be familiar with PH applications of data (1 assessment)
- $LO4_{percentage}$ = ($LO4_{coverage}$ / 2) * 100

The course instructor completed the assessment.

The Graduation Exit Survey assessed student perception of PLO achievement with the following questions:
How comfortable do you feel about your ability to:
a. Perform computations, derivations and calculations as they relate to calculus and linear algebra.
b. Use standard statistical software to create and manage datasets and perform basic statistical tests
c. Appropriately communicate statistical results.
d. Apply the public health model to biostatistical work

Response options: Very comfortable (5), somewhat comfortable (4), Neither comfortable nor uncomfortable (3), somewhat uncomfortable (2), very uncomfortable (1)

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)?

Evaluation of the Capstone project found that 100% of students (n=8) achieved the LO2 and LO4; 87.5% (n=7) achieved LO3.

	Average	% achieving outcome
PLO2	1.4	100%
PLO3	0.9	87.5%
PLO4	1	100%

Of note, the reason the one student did not achieve PLO3 is because they did not turn in one of three assessments used to assess this PLO.

Graduation Exit Survey/Student Assessment: Graduation exit survey data found that 100% of graduates reported they were somewhat/very comfortable with their level of achievement of each PLO (1-4). The average and median scores for each PLO were:
PLO1: 4.5 mean, 4.5 median (5.0 scale)
PLO2: 4.5 mean, 4.5 median (5.0 scale)
PLO3: 4.5 mean, 4.5 median (5.0 scale)
PLO4: 4.5 mean, 4.5 median (5.0 scale)

5. Findings: Interpretations & Conclusions

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

From these results, we continue to see that by the conclusion of their curriculum, 100% of BSBST students continue to have a solid foundation in PLOs 2 through 4. This indicates the course work (content, assignments) leading up to the Capstone course (BST4400) enables students to develop a solid set of skills and knowledge, evidenced by application in capstone projects and student perceptions of PLO achievement at graduation.

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?

    This information is shared with the Steering Committee; committee members are giving an opportunity to comment and discuss at Steering Committee meetings.

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

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

    No action at this time.

    If no changes are being made, please explain why.

    Our College is currently going through the self-study for our CEPH re-accreditation. We do not want to make any changes that will conflict with self-study documents already submitted and do not want to make any curricular changes in general until we have heard from our accreditors and until we know of any curricular changes that might be required due to changes in accreditation criteria.

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?

    Starting in AY2021-2022, the Biostatistics major no longer required Linear Algebra as pre-requisites to several BST courses for reasons detailed in the AY2020-2021 assessment report.

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

    This has not yet been assessed because the LO it maps to is only covered in a senior level course; we need to wait until these students who no longer will take Linear Algebra get to their senior year to see if this impacts their achievement of the LO.

    C. What were the findings of the assessment?

    N/A

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

    We plan to continue to use the Capstone to pull assessment data as it is working well.

IMPORTANT: Please submit any assessment tools (e.g., artifact prompts, 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.