Statistics and Data Science - Master of Science - Mid-Cycle Review & SLOA Year

Current Compliance Year: 2023-2024
Mid-Cycle Review

Recent Recommendations

Feedback will include recommendations from the last Expedited Review or from your most recent review by your school or college. You may not see any feedback or recommendations until you have completed your first full or mid-cycle review.

Response to Previous Recommendations (if any):

No previous recommendations were included above.

Student Learning Outcomes

The previous Student Learning Outcomes Assessment has been submitted as its own report. Going forward you will use the following prompts to discuss the success of your most recent SLOA plan and address your assessment activities since your last SLOA report (typically the past two years or since your last program review).

Learning outcomes feedback from last review:

Feedback will be provided once you have completed a full or mid-cycle review.

Discuss your SLOA findings, changes you are making and what you hope to see as a result:

There are four outcomes.
1) "Students will master …"-- Our expectation is that students will demonstrate statistical mastery and breadth repeatedly throughout their master's project research, including during interactions with committee members, in project drafts, in the project defense, and in the final report. We further expect the breadth and mastery of alumni to facilitate generally upward-trending career progression. We hold the final master's project reports to be both the principal artifact here and the most relevant data. Our notes on alumni's current whereabouts constitute additional data. During the review period, the data indicate fulfillment of the outcome to our satisfaction.
2) "Students will understand and be able to use…"--We expect students to consistently demonstrate a correct understanding of—and ability to appropriately apply—fundamental statistical theory. The main artifacts here are the comprehensive exams. Students' responses and graduates' survey responses are our data. We find them to be satisfactory for the review period.
3) "Students will have consulting skills"--We expect students to meet a minimum level of effectiveness in statistical consulting, both in technical and communication capabilities. The primary artifact here is the seminar syllabus, which we have recently updated to provide a clear assessment rubric.
4) "Students will display effective written communication skills"--We expect students to describe statistical ideas in accurate terminology and sufficiently thorough detail. The comprehensive exams and the master's projects are the artifacts. Students' performance on each comprise the data. We have judged performances to be adequate.

Discuss the curricular changes made based on assessing your SLO. If you haven't made any curricular changes, please explain why not and address what you did notice in the review, including strengths of your curriculum through the assessment of your outcomes:

To the end of improving students' ability to fulfill the first outcome (which involves breadth of understanding and ability), during the 2020-2023 period, a BS math/MS Statistics & Data Science accelerated program was introduced, which is being successful at improving enrollment (one student is finishing in Fall 2024 and at least one is planning to enroll this spring).
For the same outcome, two new courses (Statistical Computing, Data Visualization) have been developed to bring the program in alignment with the current state of the discipline. Finally, the program's name has been altered to include "data science" to signal to students that that is part of what the degree covers.
Moreover, courses have been revised to better meet the needs of our changing student population, including revising STAT F621 to incorporate Machine Learning; a new STAT F671 Statistical Computing (introduced in 2019); and a trial course on Data Visualization (in 2022). All of these program adjustments were made partly as a result of the surveys we conducted on graduates.
The program would be able to provide a wider array of courses—such as developing more specific courses focused on data science at the undergraduate and graduate level (possibly in collaboration with computer science) and supervising more graduate students—if it had additional faculty lines. Currently enrollment in the program is limited both by the availability of teaching assistantships and the number of faculty available to supervise masters projects.

Are communication outcomes embedded in the SLOA Plan?
As of 2017 all Baccalaureate programs were required to embed the communication outcomes within their SLOA Plans, this is optional for non-Baccalaureate programs.

Not Embedded

Student Success

To access the Student Success Dashboard please sign into a UA computer with VPN connection (if not on campus). You will need your UA credentials and it is best accessed with the most updated version of Chrome, Edge, Firefox or Safari browsers; Internet Explorer is not supported. You will need to filter the data to see your programs. If you need assistance in finding the data for your programs, please contact your data liaison or Julia Manfredini in the PAIR office.

Data Liaisons
Each school or college has a team of Data Liaisons to help you analyze the data provided in the portal and may be able to help you see your data in multiple contexts. You can find a list of data liaisons on the resources page for Program Review.

The college or school level committee will also have access to this data with the goal that by providing these visualizations data availability will be increased.

Data supplied within the dashboard linked below is intended for Academic Program Review and not for any other purpose.

Student Success Data Dashboard

Previous Feedback
Feedback will be provided once you have completed a full or mid-cycle review.

Student Success Data Trends: (please indicate the trends that apply to your program)

No change in majors

If equity gaps were found in any of your disaggregated student success data, please explain how you plan to address those gaps. Please contact your data liaison or make an appointment with Julia Manfredini to learn more about analyzing your data.

Because of the overall low number of students, determining actual trends in equity gaps is challenging. A broad recruitment strategy would be helpful. We have been successful in international recruitment, with recent students from [redacted] and [redacted]. In both cases, recruiting a single student resulted in more applicants.

Optional Data Explanation

Feel free to share more of your thoughts on the data provided.

With numbers so low, we are hesitant to discuss "trends." Limitations in the number of applications, in the number of TAships available, and in the number of faculty available to supervise projects, have contributed to keeping our numbers low.
Data analysis is problematic because there are very small numbers of students in the sample.
There is a national trend towards fewer applications at the MS level. However, we recently have seen a significant increase in interest in this program from international students.

High Impact Practices

According to the AAC&U, High-Impact Educational Practices "have been widely tested and have been shown to be beneficial to college students from many backgrounds." UAF is particularly interested in Undergraduate Research and/or Scholarly Activity because it is one of our mission fulfillment indicators, but all of these researched High-Impact Educational Practices should be reflected in your program's student learning outcomes and curriculum.

Previous Feedback

Feedback will be provided once you have completed a full or mid-cycle review.

High-Impact Practices Used in this Program

Please use the following fields to discuss how your program is using the high-impact practices, successes and known issues and solutions, or ways you are considering incorporating them in the future. If you are not using any of the high-impact practices listed, please use the "Other or None of These," filed to share what your program is doing to help students be successful.

High Impact Practices that currently apply to your program:

Collaborative Assignments & Projects

Undergraduate Research

Diversity/Global Learning

ePortfolios

First-Year Seminars & Experiences

Writing-Intensive Courses

Service-Learning and/or Community-based Learning

Internships

Capstone Courses & Projects

Other or None of these (explain)

This is a graduate program so the undergraduate-inspired metrics do not apply. The best measure of "high impact" is that our graduates are obtaining high-caliber academic and industry positions.

Submission

Submitter & Collaborator Names

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Submitter Email

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College or School Review Committee

The college or school committees set the tone for helping each program feel seen during this process. We have provided you with strength-based feedback tags to attach to this program review. Please select as many as applicable.

Overall Recommendations

Explanation of Recommendations

The review panel acknowledges the effort that went into revising the Statistics & Data Science MS SLOA. We appreciate the SLOA discussion section, as it provides us with additional insights into the program's SLOAs.

Learning Outcomes Feedback

Requires Minor Revision

Student Learning Outcomes Assessment Feedback (tags)

Missing a direct measure

Student Learning Outcomes Assessment Feedback (narrative)

The program provided 4 SLOs for the Statistics & Data Science MS SLOA plan. The review panel offers the following recommendations to improve upon the program's SLOAs:
- SLO #s 1, 2, & 4 are appropriate as measures of student learning.
- SLO # 3 needs to be more robust. The review panel recommends using the explanation that was mentioned in the SLOA discussion section.
- With regard to alumni tracking, the program is encouraged to retain this measure of outcome assessment for their own internal tracking purposes (just not use it as part of program review). Post-graduation activities, such as graduate school/job placement are not considered an assessment of student learning and are instead program outcomes.
- Per guidance from the NWCCU for accreditation purposes, they recommend that degree programs have between 3-5 SLOs per program.

For the next full program review, which occurs in two years, please upload assessment rubrics, artifacts, and student data (with student names redacted).

The review panel appreciates the program's discussion of curricular changes. We noted that two new courses were added and the curriculum was updated to align better with the current "state of the discipline" and meet student needs. We acknowledge that having additional faculty would be helpful in increasing enrollment.

Following NWCCU guidance, SLOA plans must emphasize "closing the loop" and continuous improvement, ensuring each SLO within the plan is assessed individually to verify alignment with program objectives. If a SLO fails to produce the expected assessment outcome, adjustments to SLO language, substantial changes to the SLO, or revisions to data collection rubrics are necessary to ensure alignment and facilitate program improvement.

Student Success & Equity Feedback

The program did not identify any equity gaps and noted that due to the overall low number of students determining actual trends in equity gaps is challenging. The program has been successful in international recruitment. The program mentioned that a broad recruitment strategy would be helpful. For the full program review, the review panel recommends including a recruitment strategy plan.

High-Impact Practices Feedback

There were no tags selected for high impact practices. High-caliber academic and industry positions are considered post-graduation activities.
While the AAC&U's high-impact practices are intended for undergraduate programs, it is useful to consider whether there are equivalent practices that would foster graduate student engagement and success, such as cohort or community building, active mentorship, or professional development opportunities. For the full program review, please consider incorporating HIPs, as well as a narrative of each HIP and associated examples as they (HIPs) have been shown to increase student engagement and success.

UNIVERSITY OF ALASKA FAIRBANKS

Student Learning Outcomes Assessment Plan

Statistics and Data Science MS

CNSM

November 16, 2023

Expanded Statement of Institutional Purpose	Intended Objectives/Outcomes	Assessment Criteria and Procedures	Implementation (what, when, who)
MISSION STATEMENT: We shall provide a thorough graduate education in statistical theory and methods. **GOAL STATEMENT**: We aim to ensure that our students have the skills to successfully compete for and excel in jobs in applied statistics. Our students will be highly qualified, in particular, as biometricians for government agencies. The students will also be well-prepared for additional education in statistics.	Students will master a wide variety of statistical tests, procedures, and sampling methodologies, and will be able to design experiments and analyze data using software including R.	EXIT LEVEL: Evaluation of the students' research projects or theses ALUMNI: Follow the careers of program graduates	EXIT LEVEL: Examined by all members of the program faculty ALUMNI: Data compiled by program coordinator
	Students will understand and be able to use statistical theory.	EXIT LEVEL: 1) Written and oral part of the comprehensive exam. 2) Report by the students' advisors. ALUMNI: Follow the careers and further education of the graduates. Survey the graduates to see if their training was satisfactory.	EXIT LEVEL: Written—assessed by the program faculty; Oral—assessed by the graduate committee ALUMNI: Contacts to be maintained by the program coordinator
	Students will have consulting skills.	EXIT LEVEL: Students' achievement in the consulting seminar ALUMNI: Follow the careers of graduates	EXIT LEVEL: Ascertained by the faculty member in charge of the seminar ALUMNI: Contacts to be maintained by the program coordinator
	Students will display effective written communication skills.	EXIT LEVEL: 1) Evaluation of the students' research projects or theses 2) Oral portion of comprehensive exam	EXIT LEVEL: Assessed by the program faculty at the time of graduation

Submitted by: