

Computer Science - Master of Science - Mid-Cycle Review & SLOA Year

Current Compliance Year: 2022-2023

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):

"Develop online options for working students": All of our graduate courses are available completely online via synchronous distance, and several students from around the state have taken CS MS courses this way.

"Explore curricular revisions to make degree more attainable": We believe this recommendation was intended for the BS. We redesigned our CS MS curriculum in 2016.

"Develop a plan to increase gender diversity": See the discussion in Equity Gaps below.

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:

In 2020-2022 we administered 14 comprehensive exams, with 9 pass, 5 conditional pass (each later upgraded to pass), and zero failures. Due to COVID, we did the interview style section of the comprehensive exam via Zoom video conference, which worked well. We wrote a script for the interview style questions, which helped maintain fairness across students.

100% of our graduating students in 2020-2022 have also earned a UAF CS BS degree, and 6/10 earned the BS/MS rather than standalone MS, which continues a longstanding trend.

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:

For the 2021 comprehensive exam, we stopped using written comprehensive exam questions and switched to open-ended interview-style questions like "What does a compiler do?". This allowed us to use follow-up questions to probe the student's understanding of the material, and find holes that we need to fix in the curriculum. It's also easier to confirm interactively the difference between

misunderstanding a question, having the correct rough idea but a few details wrong, and being completely wrong.

In CS 600 (Professional Software Development) we have built a heavily revamped syllabus that structures the course around building a project from an idea to a minimum viable product. This includes requirements, technical feasibility, analyzing risks, and managing the project. We will implement this in the fall 2023 cycle.

In CS 601 in spring 2022 we re-focused the course content, removing some optional material (Shannon entropy theory, dynamic programming) to more thoroughly cover the interrelationships between instruction set design, compiler internals, and algorithm design. This more focused approach worked well.

With COVID impacting students' ability to have the broad in-person conversations that are key to formulating a research question and approach, in CS 690/691 we have introduced a new "talk 0" designed around a group brainstorming google doc. This hybrid presentation approach mixes discussion with written brainstorming. So far this has been successful in getting students started on narrowing down their project topic, and formulating a coherent research question. Students must still give 3 talks (proposal, progress and final) before their MS project is considered complete.

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.

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:

Decline 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.

Since fall 2018, 15 students have earned CS Master's degrees, and two of those degrees were earned by women which is close to the 18% national average. Two thirds of our CS MS students enter via our BS/MS program, so improvements to our gender ratio in the BS will feed into our MS as well. Test anxiety and "impostor syndrome" can particularly impact the performance of diverse students on high-stakes exams, such as our interview-style comprehensive exam. So we now begin that exam with the statement "First, we're glad you're in the CS program and we're rooting for you to pass. We're asking questions not only to evaluate you, but also to evaluate how well we're teaching you. (Comps results are also used for us to assess and improve our master's program.)" We welcome suggestions on approaches to address this longstanding gap.

Optional Data Explanation

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

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," field to share what your program is doing to help students be successful.

High Impact Practices that currently apply to your program:

Other or None of these (explain)

Submission

Submitter & Collaborator Names

Dr. Orion Lawlor

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

Develop online offerings/options, Consider curricular revisions, Address equity gap

Explanation of Recommendations

Develop online options for working students, explore curricular revisions to make degree more attainable.

Develop a plan to increase gender diversity.

Student Learning Outcomes Assessment Feedback (tags)

Strong alignment with SLOA plan, Compelling learning story

Student Learning Outcomes Assessment Feedback (narrative)

SLOA is strong and well aligned with ABET. The program shows strong alignment between the plan, the results, and the analysis done by the program. They provide a good discussion on curriculum changes and the switch to an open-ended interview for better assessment of students overall learning.

Profile Feedback

Financial Feedback

Student Success & Equity Feedback

The program discusses how accelerated programs seem to have more popularity with BS majors as seen in the graduation rates. They recognize the gender disparity and it is similar to the national average. They comment the improvements to the gender gap in the BS level will feed into the MS as well, however, it seems like the main way they are addressing the BS is by creating a BA. Is the BA an option for the accelerated MS?

High-Impact Practices Feedback

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.

UNIVERSITY OF ALASKA FAIRBANKS
Student Learning Outcomes Assessment Plan
Master of Science in Computer Science
 College of Engineering and Mines
 2021

Expanded Statement of Institutional Purpose	Intended Objectives/Outcomes	Assessment Criteria and Procedures	Implementation (what, when, who)
MISSION STATEMENT: To provide quality education consistent with the requirements of the Computing Accreditation Commission of ABET and the recommendations of the UAF Computer Science Industry Advisory Board, which is responsive to the needs of individual students and the diverse population of Alaska. GOAL STATEMENT: The faculty of the Department of Computer Science at UAF provides a positive learning environment that enables students to pursue their goals in an innovative program that is rigorous, challenging and supportive. The M.S. program prepares students to be effective researchers or faculty members or to have leading roles in computer science.	Knowledge: Students will demonstrate knowledge of theoretical foundations and formal methods in computer science.	• Comprehensive exam results • Faculty assessment of MS projects • Graduate committee evaluation	Comprehensive exam results collected and summarized annually by the Graduate Committee. Individual graduate advisory committees assess each student's project. Graduate Committee as a whole evaluates above data yearly, makes recommendations.
	Communication: Students will demonstrate the ability to communicate effectively both orally and in writing.	• Faculty assessment of MS project reports • Graduate committee evaluation of three formal graduate seminar talks	Seminar presentations assessed by attending faculty. Individual graduate advisory committees assess each student's project report. Graduate Committee as a whole evaluates above data yearly, makes recommendations.
	Practice: Students will demonstrate the ability to apply their knowledge to practical problems.	• Faculty assessment of MS projects. • Graduate committee evaluation	Individual graduate advisory committees assess each student's project. Graduate Committee as a whole evaluates above data yearly, makes recommendations.