# Academic Program Review

## Program Name: Chemistry - Master of Science

### Academic Year 2025/2026

## Recent Recommendations

Using your most recent review, please respond to all feedback and recommendations.

Response:

Overall comments from the review committee were: "Address equity gap,Increase enrollment,Increase graduates". From the Dean, the comment was "The close collaboration with the UAA chemistry department is especially valuable. I am excited to see the accelerated BS/MS program take shape and expect this program to be of value, especially for high achieving students.". We have a fairly small M.S. program that leads to a lot of variability, making it difficult to assess equity gaps in the data. We have limited faculty members in our program who could mentor M.S. students in addition to the Ph.D. students they already are mentoring, so it is difficult to increase enrollment. During this period, the M.S. program averaged 10 students with 1 student in the Accelerated B.S./M.S. program. From 2023 -- 2025, the M.S. program graduated five total M.S. students, four from the normal M.S., one from the accelerated B.S./M.S. program. Two M.S. students moved from the M.S. program to our Ph.D. programs. Most of the remaining students are still pursuing their M.S. degrees. We are excited to have graduated (in Summer 2025) the first accelerated B.S./M.S. student. We have had two new students enter the B.S./M.S. program and have interest among a number of other undergraduates. The B.S./M.S. program is starting to grow.

## Student Learning Outcomes

Describe the assessment of your student learning outcomes (SLOs). Discuss your findings, changes you are making, and what you hope to see as a result.

Response:

See the attached summary student learning outcome (SLO) assessment. The program assesses how students are performing in a seven-point rubric, and M.S. students were found to be performing above our expectation on average in all areas. We also captured publications that resulted from M.S. student research and we provide a listing of those publications in the uploaded data. Lastly, we counted conference participation and presentations and found that M.S. students averaged one presentation per annual reporting cycle, indicating that they are doing high quality work and sharing it with their research communities. Overall our findings were that M.S. students were performing well compared to SLO expections.

Did you make any curricular changes based on your most recent SLOA? If so, discuss what changes were made. If no changes were made, please discuss the strengths of your curriculum based on the assessment of your outcomes.

Response:

We didn't make any curricular changes to the M.S. program in this period.

As of 2017, all Baccalaureate programs are required to embed communication outcomes within their SLOA Plans. This is optional for non-Baccalaureate programs.

Communication outcomes in the SLOA plan are: Not Embedded

Check the checkbox to certify completion of the following tasks:

☑ Upload supporting documents to the Supporting Documents folder. This includes artifacts, rubrics, and other documents related to your SLOA.

☑ Upload your most recent SLOA to the Supporting Documents folder, even if no changes have been made since the last review.

Have changes been made to your SLOA document since your last review? No

If so, please summarize what changes were made.

Response:

No changes

## High Impact Practices

Please indicate which high impact practices are currently being implemented in relation to the program's student learning outcomes.

- [x] Capstone Courses & Projects
- [x] Collaborative Assignments & Projects
- [ ] Diversity/Global Learning
- [ ] ePortfolios
- [ ] First-Year Seminars and Experiences
- [ ] Internships
- [ ] Service or Community-Based Learning
- [x] Undergraduate Research
- [ ] Labs
- [x] Graduate Level Research
- [x] Writing-Intensive Courses
- [x] Publications
- [x] Communications
- [x] Scholarly Activities
- [ ] Studios
- [ ] Practicum
- [ ] Other
- [ ] None of these

Discuss how the HIPs in the program are reflected in the SLOA. If you have identified HIPs that are not included in the SLOA, please consider an update.

Response:

This is a graduate program, which largely involves research culminating in a thesis or a project report. Students learn to write as professional chemists and often are authors on manuscripts that are submitted for peer review. Graduate students often present their work at scientific conferences. Graduate students also assist in mentoring of undergraduate researchers, increasing their skills as mentors and assisting undergraduates to have an authentic research experience.

## Student Success

Please reference the Resources tab for information on accessing the Student Success Data Dashboard and contacting your designated data liaisons.

**Student Success Data Trends**

Persistence: No Change
Pass Rates: No Change
Student Credit Hours: No Change
Majors: No Change
Degrees Awarded: No Change

Other Trends (if applicable):

Note that we are discussing trends in the M.S. program, not overall in the major or department. As noted earlier, there is a lot of variability due to small student numbers in the M.S. program.

**Achievement Disparities**

Discuss any achievement disparities identified in your disaggregated student success data and explain how you plan to address them.

Response:

We didn't identify any achievement disparties in the disaggregated student success data.

## Closing the Loop

Please discuss how your student learning outcomes are reflected in high impact practices and student success data. Response:

Students are succeeding in the program as currently structured and no changes were made.

## Academic Program Profile

The following questions help show how your program supports the university's mission, connects with other UA programs, engages with the community, contributes through service courses, and supports student success after graduation. Please use this section to highlight the value your program brings to students, the university, and beyond.

UAF's Mission:

*The University of Alaska Fairbanks is a Land, Sea, and Space Grant university and an international center for research, education, and the arts, emphasizing the circumpolar North and its diverse peoples. UAF integrates teaching, research, and public service as it educates students for active citizenship and prepares them for lifelong learning and careers.*

In what ways does your program advance UAF's mission?

Response:

The M.S. program in chemistry assists students in gaining employment skills and preparing them for further study, and our student outcomes indicate success in these areas.

How is your program related to others in the UA system?

Response:

Our program collaborates with other UA campuses to share instrumentation and expertise in the pursuit of advancement of chemistry. We have an active collaboration with UAA Chemistry and one M.S. student in our program was working with a UAA Faculty co-chair in this period. UAA Chemistry has exclent instrumentation in the Applied Sciences and Engineering Technology (ASET) laboratory run by Dr. [redacted], and we collaborate with them to use their instrumentation.

Who are your key community or external partners?

Response:

We partner with local industry (e.g. Environmental Consultants) and State of Alaska agencies (e.g., Department of Environmental Conservation) to connect our students with employment. In this period, of the five graduates, one graduate works as a chemist at a local company, and one graduate is working for an acadamic analytical laboratory. We don't have service course at the graduate level, but M.S. students often act as TAs who assist in efficiently delivering General Chemistry Laboratory sections for our department.

How do your graduates succeed after leaving the program?

Response:

See the attached assessment data report. All five graduates are employed or have continued schooling with the last graduate seeking to continue schooling. In addition to these five graduates, two students in the progam transferred into Ph.D. programs in our department, furthering their schooling.

**Submitter and Collaborator Names:**

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# Committee Review

## Program Name: Chemistry – Master of Science

### Academic Year 2025/2026

## Overall Recommendations

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

- [x] Insufficent Narratives
- [ ] Address Achievement Gap
- [ ] Develop Online Offerings/Options
- [x] Increase Enrollment
- [ ] Increase Retention/Persistence
- [x] May be asked to share Effective Practices
- [ ] Report Incomplete
- [x] Consider Curricular Revisions
- [ ] Improve Time to Degree
- [ ] Increase Graduates
- [ ] Strengthen Advising Practices
- [ ] Recommendation to University-Wide Committee

## Explanation of Overall Recommendations

Response:

The program provided the feedback from the unit-peer committee and CNSM dean from the full-program review in 2023 which was to address achievement disparities (equity gaps), increase enrollment, and increases graduates. The program noted challenges in meeting the recommendations for increasing enrollment and graduates due to low faculty numbers. Given the small program size (student enrollment) it is challenging to address the achievement disparities due to annual variability in student composition in the program. The program will need to document continuous improvement and closing the loop in the next full-program review in 2027 (see SLOA Feedback Narrative below).

## Student Learning Outcomes Feedback

- [ ] Strong
- [x] Requires Minor Revision
- [ ] Developing
- [ ] Requires Major Revision

## Student Learning Outcomes Assessment Feedback

- [x] Strong Alignment with SLOA Plan
- [ ] Compelling Learning Story
- [ ] Missing Active Verbs
- [ ] Missing Collaboration within Department
- [x] Clear, Concise Presentation of Findings
- [ ] Missing a Direct Measure
- [x] Missing Curricular Connection

SLOA Feedback Narrative:

Provided 4 SLOs. SLO #s 1-3 are good, although they could be more clearly articulated/defined, (e.g., what communication/presentation skills are specifically consistent with professional standards?). SLO #4 is not a SLO and should be deleted or replaced; note that this is an important program outcome (tracking graduates and employment) and play an important role for program tracking but do not meet the criteria for SLOs. Per NWCCU, academic programs should have 3-6 SLOs; without SLO #4, the MS in Chemistry still meets this criterion and assess knowledge, skills, and/or abilities that students should attain by the time they graduate from the program. The program did provide a narrative overview of how they are addressing each SLO and included relevant data/evidence in the supporting documents folder. In the narrative, the program referenced a seven-point rubric that is used for assessment; for future reviews, it will be important to provide all relevant artifacts/ rubrics as supplementary documents to document the assessment process.

Noted that the program did not make any curricular changes since the last review in 2023. Because there were no changes, the program needs to discuss the strength of this academic program and why no curricular changes were made during the review period.

The program did not discuss how SLOs are reflected in the HIPs and student success data. Documenting continuous improvement and the closing of the loop are important components of the program review process, not just as an exercise, but to demonstrate that assessment results are used to make meaningful, evidence-based changes that enhance program quality and student learning. This process ensures accountability, fosters a culture of ongoing improvement, and provides clear evidence to accreditors and stakeholders that actions lead to measurable outcomes. Will need to address in the next program review.

## Student Success and Equity Feedback

Narrative:

The program review provided a partial examination of the Student Success Dashboard, noting stability and minimal change in key performance indicators, including persistence, pass rates, student credit hours, majors, and degrees awarded. Beyond these core metrics, the review offered limited commentary on other trends, though it briefly mentioned increased enrollment in the B.S./M.S. accelerated program and positive post-program outcomes, such as employment or continued education in PhD programs.

The dashboard showed lower participation by [redacted] students; however, the review appropriately noted that low enrollment creates high data variability, which can influence interpretation of this trend.

The review did not include actionable strategies to improve retention or graduation rates, instead citing operational challenges, specifically limited faculty availability, as a barrier. Additionally, there were no concrete plans to support diverse student success, promote equity, or implement inclusive practices. While expanding enrollment may not be immediately feasible before the 2027 full program review, detailing strategies to support diverse students will help shift the focus from operational limitations and demonstrate a clear commitment to equity and inclusion.

## High Impact Practices Feedback

Narrative:

**Reviewer Names:**