

**2022 ANNUAL ACADEMIC ASSESSMENT REPORT FORM  
(Due October 15 to the dean)**

The Faculty Senate Academic Assessment Committee (AAC) is committed to a vision of assessment that leads to continuous program improvements and benefits students. Annual assessment reporting informs decision making and resource allocation aimed at improving student learning and success. It also enables the AAC to analyze assessment across the institution and to respond to UA System, Board of Regents, legislative, and Northwest Commission on Colleges and Universities (NWCCU) requests. We thank you for your continued support of and participation in this annual activity.

Starting in Spring 2021, UAA moved to one academic assessment reporting mechanism. The below form merges and streamlines the former Annual Academic Assessment Survey and the Annual Academic Assessment Report. It also incorporates questions about how academic programs contribute to student achievement of institutional core competencies and to student success.

**This annual report will be due to the dean on October 15. Programs with suspended admissions and new programs in the first year of implementation are not required to complete this form.**

These reports are public documents and will be posted on the assessment website. Responses are to be narrative only, and must be ADA- and FERPA-compliant. Do not embed any links, including to webpages or other documents. To be FERPA-compliant, do not include the names of any current or former students. Rather, use statements such as, "In AY22 four program graduates were accepted to graduate programs in the field." Programs with specialized accreditation or other external recognitions must comply with restrictions regarding what can be published, as per the accreditor or external organization. Do not include appendices. Appendices to this form will not be accepted.

The form uses narrative, text, and drop-down boxes. Narrative boxes have a character limit, which includes spaces. When using text and drop-down boxes, if you want to undo an answer, press "Control-Z" or "Command-Z."

*Note:* To ensure the fillable fields function correctly, the form must be completed in Microsoft Word. It will not function properly in Google Docs. Programs that wish to record collaborative discussion of the report might consider creating a separate document to take notes, before entering final responses in the official fillable form.

For technical assistance with this form, email Academic Affairs ([uaa.oaa@alaska.edu](mailto:uaa.oaa@alaska.edu)).

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### PROGRAM SECTION (Due to the dean on October 15)

*After completing the Program Section, the program should email this form to the dean, with a copy to the appropriate community campus director(s) if the program is delivered on a community campus.*

**Submission date:** 10/17/2022

**Submitted by:** Patrick Tomco, Associate Professor of Chemistry, pltomco@alaska.edu

**Program(s) covered in this report:** Chemistry BS

*(Programs with suspended admissions and new programs in the first year of implementation are not required to complete this form.)*

If you selected "Other" above, please identify. (100 characters or less)

**College:** College of Arts and Sciences

**Campuses where the program(s) is delivered:**  Anchorage  KOD  KPC  MSC  PWSC

**Specialized accrediting agency (if applicable):** Select Specialized Accrediting Agency or N/A.

**If explanation is necessary, such as only some of the certificates and degrees are covered by the specialized accreditation, briefly describe:**

### INSTITUTIONAL STUDENT LEARNING CORE COMPETENCIES

In 2020, UAA launched a consensus-based, deliberative process to identify the key skillsets that help students achieve academic and post-graduation success. After a year-long process that included students, faculty, staff, administrators, alumni, and employers, the UAA community identified four core competencies at the heart of a quality UAA education. Students develop mastery of these competencies through curricular (e.g., courses), co-curricular (e.g., internships, conferences), and extra-curricular (e.g., student clubs) learning experiences.

After the stakeholder-based process in AY20, UAA is phasing in the integration of the core competencies into ongoing processes, including program student learning outcomes assessment. Personal, Professional, and Community Responsibility (PPCR) was integrated into the AY21 Annual Academic Assessment Report. The AY22 Annual Academic Assessment Report now also integrates Effective Communication.

Question #1 below is designed to engage program faculty in thinking about how they can or already do promote student learning in these two core competencies.

1. **A. *Personal, Professional, and Community Responsibility: The knowledge and skills necessary to promote personal flourishing, professional excellence, and community engagement.***

- **If last year you provided your program's current or planned example of an intentionally designed course, assignment, or activity that develops and showcases the student learning in this core competency, please discuss that implementation and any observations you have regarding how well it is working. (500 characters or less)**

Last year's example activity centered around the planned execution of community engagement through outreach events. The UAA Student Chapter of American Chemistry Society Club was reactivated following a covid-lapse. Multiple outreach activities took place in the community, such as a Chemistry community poetry competition, lab coat tie-dye events, liquid nitrogen ice cream, and other in-person chemistry demonstrations.

- **If last year you *did not* identify a current or planned example of an intentionally designed course, assignment, or activity that provides students the opportunity to develop and showcase this core competency, please identify one now. (500 characters or less)**

Looking back on last year's report, it is evident that a course or assignment was not identified, rather an 'activity' was noted, it was performed by many chemistry majors as a co-curricular activity. If we were to add anything, it would be the professional presentation skills that are assessed in Chem 481 and 482; students are required to present research papers to their peers modeling the appropriate presentation skills that would be acceptable at a national conference.

**B. *Effective Communication: The knowledge and skills necessary to engage in effective communication in diverse contexts and formats.***

- **What would you hope a student would say if asked where in your program or support service they had the opportunity to develop proficiency in this core competency? (500 characters or less)**

Students would likely point to their experience in Chem A418: Chemical Instrumentation and Methods. The course involved a mock conference where students were required to present a poster in the CPISB atrium on the topic of their chosen individual research project. They would likely state that although much of the curriculum is oriented towards knowledge acquisition, there were several examples where communicating laboratory findings (at the lower and upper division) were assessed.

- **Provide your program's current or planned example(s) of an intentionally designed course, assignment, or activity that showcases the student learning in this core competency. (500 characters or less)**

The best example for 'effective communication' is the mock conference that is held annually in the CPISB Atrium. Any chemistry student is invited to participate, although Chem 418 students are required to communicate the findings of their independent research project to

their peers and a panel of judges. This is intended to assess effective skills in communicating with professional chemists across a range of subdisciplines in the chemical sciences.

## PROGRAM STUDENT LEARNING OUTCOMES

2. Please list the Program Student Learning Outcomes your program assessed in AY22. For each outcome, indicate one of the following: Exceeded faculty expectations, Met faculty expectations, or Did not meet faculty expectations.

*Example: Communicate effectively in a variety of contexts and formats – Exceeded faculty expectations.*

SLO #1: Understand and critically solve problems related to Physical and Natural Sciences and present those solutions for the advancement of knowledge in the field of Chemistry and Biochemistry. - Met faculty expectations

SLO #2: Design and conduct experiments that include fieldwork, laboratory analyses, instrumental methods, theoretical development and interpretation in the discipline. - Exceeded faculty expectations.

3. Describe your assessment process in AY22 for these Program Student Learning Outcomes, including the collection of data, analysis of data, and faculty (and other, e.g., advisory board) conversations around the findings. (750 characters or less)

The process remained largely unchanged from the previous year:

- Grade data were provided by staff and compiled by faculty in JMP 16 (SAS Institute) and annual grade data compared to 3-year running average (Fall 2018-Spring 2021). Several departures of staff in the past year made attaining this information difficult. One retired, one resigned, and one accepted a new position at UAA Research Office. Current staff was able to pull the data in TOAD
- Assessment results were presented and discussed during faculty meetings where all faculty were invited to participate.
- Conversations with faculty were conducted individually with chemistry instructors and Dr. Tomco throughout the academic year

4. What are the findings and what do they tell the faculty about student learning in your program? (750 characters or less)

The Chemistry department has for many years placed an emphasis on assessment of student grades with a primary focus on D,F, and W rates across the curriculum and indicating improvement opportunities. The composite distribution of grades for all chemistry classes during AY21-22 were inspected (N=1670 for Anchorage Campus). The data indicate a D,F,W rate of 26.6%, with rates of

A's, B's, and C's at 28.5, 25.4, and 17.5% respectively. These are in-line with 3-yr rolling averages of 27.5% D,F,W with 25.8, 25.2, and 18.0% for A,B,C's respectively. Among many factors in a comprehensive assessment plan, this information indicates that AY21-22 saw only nominal changes in student grades from previous years, indicating academic progress is good.

- 5. Based on the findings, did the faculty make any recommendations for changes to improve student achievement of the Program Student Learning Outcomes? Please describe the recommended action, what improvement in student learning the program hopes to see with this change, the proposed timeline, and how the program will know if the change has worked. If no recommendations for changes were made, please explain that decision. (750 Characters or less)**

Faculty were all unified in the interest of developing 'tracks' for the chemistry major. This consists of a recommended list of courses that can be taken to satisfy job qualifications in the most high-demand outlets for chemistry majors: Pre-medical biochemistry, Biochemistry for the health sciences, Forensic chemistry, and Environmental chemistry. Faculty indicated Forensic Chemistry in particular is a 'hot' major across the nation and that many students have inquired about being able to study this area. The faculty believe that mapping these pathways will significantly increase student achievement with a defined focus area, while at the same time providing a broad-based education in the chemical sciences applicable across disciplines.

#### PROGRAM IMPROVEMENTS AND ASSESSING IMPACT ON STUDENT LEARNING

- 6. In the past academic year, how did your program use the results of previous assessment cycles to make changes intended to improve student achievement of the Program Student Learning Outcomes? Please check all that apply.**

- Course curriculum changes
- Course prerequisite changes
- Changes in teaching methods
- Changes in advising
- Degree requirement changes
- Degree course sequencing
- Course enrollment changes (e.g., course capacity, grading structure [pass/fail, A-F])
- Changes in program policies/procedures
- Changes to Program Student Learning Outcomes (PSLOs)
- College-wide initiatives (e.g., High-Impact Practices)
- Faculty, staff, student development
- Other
- No changes were implemented in AY22.

**If you checked "Other" above, please describe. (100 characters or less)**

**7. Do you have any information about how well these or other past improvements are working? Are they achieving their intended goals? Please include any data or assessment results that help you demonstrate this. (750 characters or less)**

Two items:

- 1) Last year, chemistry faculty wanted to ensure past suggestions on implementing high-impact practices would be facilitated by new faculty hires. When hiring replacement faculty for recent departures became feasible on a limited basis, we selected two new faculty who have both been excellent additions to the department and have demonstrated strong commitments to these assessment initiatives for student success.
- 2) The chemistry department modified its Math prerequisites recently for Chem 103 and 105 to College Algebra or Aleks score=65. While this switch has helped D,F,W rates, faculty note issues with applied math skills; no course exists at UAA that assess this topic relevant to intro chemistry.

### STUDENT SUCCESS AND THE CLOSING OF EQUITY GAPS

Student success depends on many aspects of a student's experience. On the academic program level, it can relate to correct placement, course sequencing, standardized pre-requisites across sets of courses, the intentional use of high-impact practices, proactive advising, course scheduling practices, etc.

UAA has selected the below metrics as student success metrics for accreditation.

In response to faculty questions and concerns about reporting on these data without more discussion and training, we will spend AY23 exploring together what equity data are and are not, how they can be used responsibly, and what programs can do to close equity gaps in student achievement on the below metrics, as well as to improve overall student achievement on them. UAA has a team participating in the NWCCU Data Equity Fellowship, and that team will help to guide these conversations.

**8. PROGRAMS ARE NOT REQUIRED TO RESPOND TO QUESTION #8 FOR THEIR REPORT DUE ON OCTOBER 15, 2022. IT IS HERE JUST FOR THEIR REFERENCE. Describe the actions your program is taking to improve student achievement on one or more of the following metrics. Also, describe any resulting improvements in student learning.**

Metric	Definition	Rationale
UNDERGRADUATE COURSE PASS RATES BY COURSE LEVEL (Undergraduate lower-division, undergraduate upper-division).	The percentage of students who receive a passing grade (A, B, C, P) for all undergraduate students in a course offered by a program compared to the same rate calculated for all courses at that level. Based on a 5-year	Low pass rates are one critical way to identify courses that are barriers to student success and degree completion. Failing key courses correlates with low retention and more major switching. Mitigation strategies can be internal or external to the

Metric	Definition	Rationale
	trend. Included in the denominator for undergraduate courses are the grades D, F, W, I, NP, NB. <i>Data source: RPTP end-of-term freeze files. Disaggregate as per accreditation.</i>	course itself, including, among other things, the use of high-impact pedagogical practices, appropriate placement, course sequencing, tutoring, and other means to ensure student success within a particular course. This metric and the disaggregation of the data can inform planning, decision making, and the allocation of resources to programs and services designed to mitigate gaps in achievement and equity.
ANNUAL RETENTION 1 <sup>ST</sup> TO 2 <sup>ND</sup> FALL	Traditional measure of the % of first-time, full-time associate and baccalaureate degree-seeking freshmen who enter in a given fall term and return the following fall. <i>Data source: UA System Warehouse RPTP/DEDMGR end-of-term freeze files. Disaggregate as per accreditation on an annual basis.</i>	Following the student from the 1 <sup>st</sup> fall to 2 <sup>nd</sup> fall can indicate ongoing connections and support inside and outside of the classroom are motivating students to return to continue their studies at the institution. Continuing enrollment is a key factor in completion.
SEMESTERS TO DEGREE – GRADUATE PROGRAMS	The average number of semesters taken by students to complete any graduate degree or graduate certificate program. Determined by students who have graduated from a graduate program as their primary degree. 5-year trend. <i>Data source: UA System Warehouse RPTP/DEDMGR end-of-term freeze files. Disaggregate as per accreditation on an annual basis.</i>	Looking at the number of semesters graduate students take to complete their degrees illustrates how students progress through their degree programs (full-time, part-time, stop-out). This information on student behavior and completion can inform program structure and help the institution support students in a way that honors the time needed for rigorous intellectual engagement and growth and also ensures that students can complete in a timely manner.

9. **Do you have any examples of post-graduate success you want to highlight? For example, major scholarships, the percent of students who pass licensure examinations, the percent of students accepted to graduate programs, the percent in post-graduation employment in the field or a related field. (750 characters or less)**

The UAA Pharmacy Program Dean recently indicated that UAA Chemistry students are frequently the best and most-prepared group of incoming students to their program.

Two students graduated with an M.S. in Interdisciplinary Sciences with concentration in Analytical Chemistry. One is now a staff researcher for the Applied Environmental Research Center; the other is now manager of an analytical testing facility in China.

Chemistry majors have been recognized repeatedly by COH WWAMI advisers for their preparedness for medical school and high rate of acceptance. This year's WWAMI cohort has three recent UAA Chemistry graduates.

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#### **DEAN SECTION (Due to the program on January 15)**

*After completing the Dean Section and signing it, the dean should email this form to the program, and copy [uaa\\_oaa@alaska.edu](mailto:uaa_oaa@alaska.edu) for posting. If the program is delivered on one or more community campus, the dean should consult with the appropriate community campus director(s) on the response and copy the appropriate community campus director(s) when emailing the response to the program.*

1. **Based on the program's responses above, what guidance and support do you have for the program moving forward? (750 characters or less)**

I appreciate the department's continued attention to D,F,W rates. The examples given about changing prerequisites and promoting high impact practices are good and deserve follow up to determine impact. A larger conversation about these rates is planned for the College and Chemistry's input will be important.

2. **What is the program doing particularly well in terms of its processes for the assessment and improvement of student learning, for example, the achievement of the Program Student Learning Outcomes, the closing of equity gaps, or addressing the core competencies? (750 characters or less)**

The Chemistry Department's idea of providing suggested pathways for various occupations is appreciated and encouraged, however these should be guidance for students and not formal tracks and requirements for degree. The program provides opportunities in CHEM 418 to give poster presentations as a "communication of laboratory findings" exercise.





Dean's signature:

Jenny McNulty

Date: 1/9/2023