

**2021 ANNUAL ACADEMIC ASSESSMENT REPORT FORM**  
**(Due October 15 to the dean)****PROGRAM SECTION (Due to the dean on October 15)****Submission date:** 10/15/2021**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):** 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 conducted a pilot project focusing on the core competency of Personal, Professional, and Community Responsibility (PPCR). This decision was based on input from the 2020 Annual Academic Assessment Retreat.

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

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

- **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)**

Building community within a student body is an essential aspect of growing and sustaining a program. Students, like all people, need community and support for each other as well as purpose and opportunity to share with others. The chemistry department has developed innovative co- and extra- curricular opportunities for chemistry majors to collaborate with National and Local sections of the American Chemical Society (ACS), National Institute for Informal STEM Education, and local outlets.

- **Do you have an example that could be a model for the university of an intentionally designed course, assignment, or activity that showcases the student learning in this core competency? ☒Yes ☐No**

**If yes, please briefly describe. (500 characters or less)**

Chemistry faculty have been nationally recognized for outreach programs that connect chemistry undergraduates with young (and old) learners from all across the state of Alaska. During this time, 79 UAA undergraduate students have received formal outreach training. They have brought the joy of topics such as fluorescent slime, moving molecules, colorful chemistry, and many other activities to over 9600 community members across Alaska during 12 annual outreach events.

- **Do you have any ideas about where your program or the university might develop other intentionally designed opportunities for students to develop proficiency in this core competency? ☒Yes ☐No**

**If yes, please briefly describe. (500 characters or less)**

We would like to continue outreach activities and providing co-curricular opportunities for students to disseminate their research findings at local, regional, and national symposia and conferences.

## **PROGRAM STUDENT LEARNING OUTCOMES**

**2. Please list the Program Student Learning Outcomes your program assessed in AY21. 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. - Met faculty expectations.

**3. Describe your assessment process in AY21 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 Mist D'June Gussak and compiled by Dr. Tomco in JMP 13 (SAS Institute) and annual grade data compared to 3-year running average (2017-2019)
- 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)**

(Note, graph/figure insertions were disabled in the form fillable document provided this year)

The composite distribution of grades assigned for all chemistry classes during AY20-21 were inspected (N=1,688). The data indicate a D,F,W rate of 24.6%, with 30.3, 21.6, and 14.4 % rates of A's, B's, and C's, respectively. These D,F,W rates are significantly lower than the 3-year composite average for all chemistry courses (27.7%), which include 24.6, 24.7, and 17.7 % composite averages of A's, B's, and C's, respectively. We are interested in monitoring this "Covid Bump", where grades assigned (students successfully demonstrating learning outcomes were met) were higher than they were at any other prior point in the department's history.

**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)**

As covid spikes continue into AY21-22, the Chemistry department has had to continually re-assess and remain flexible with its position on in-person requirements to allow students to meet learning outcomes. The department recognizes that, where feasible, social distancing and online curricula

can be used in limited cases to supplement laboratory exercise, but evidence from student and faculty conversations alike indicate that the laboratory component should remain in-person wherever feasible.

## 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 AY21.

**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)**

The chemistry department remains focused on improving D, F, and W rates, especially in first-semester general chemistry courses. This is a complex issue and our department works to ensure conversations are inclusive of term and adjunct faculty, who perform the majority of our instructional duties at these levels. These conversations have lead to us evaluating (and re-evaluating) the utility of course prep remediation materials, e.g. ALEKS ChemPrep.

**8. Programs are not required to respond to question #8 below for their report due on October 15, 2021. Question #8 will be required for the next round and moving forward.**

- 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)**

Among several success stories we would like to highlight, the UAA Chemistry program remains one of the most represented BS degrees for entering WWAMI students. Several students have successfully attained admission to pharmacy school and Chemistry graduate programs. Three known students who graduated in AY20-21 are currently enrolled in Ph.D programs in Chemistry, additionally other students obtained employment at state labs (Dept of Environmental Conservation, State Forensic Crime Lab, DPH Lab) and in local industry at environmental consulting companies.

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

- 1. Based on the program's responses above, what guidance and support do you have for the program moving forward? Is there a particular area the program should focus on?**

The Department is encouraged to continue the focus on improving DFW rates, to re-evaluation of ALEKS ChemPrep, and to consider implementing late start classes.

It is recommended that all programs review their Program Assessment Plan to ensure clear inclusion of the new UAA Core Competencies and in particular to address the closing of any equity gaps in the program.

- 2. Is there something the program is doing particularly well in terms of its processes for the assessment and improvement of student learning, including the closing of equity gaps, that might serve as a model for other programs? If yes, please explain. You may skip this question. (750 characters or less)**

The outreach training received by their undergraduates which leads inevitably to job placement is a plus.

Dean's signature: *Jenny McNulty*

**Date:** December 14, 2021