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

PROGRAM SECTION (Due to the dean on October 15)

Submission date: 10/17/2022

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Program(s) covered in this report: Biological Sciences MS

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: N/A

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.

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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)***

- **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)***
All of our required graduate courses provide students numerous opportunities to develop and showcase this core competency. BIOL A601 and 605 focus on the development of a range of personal and professional skills. A component of BIOL A601 is the writing of an NSF style research proposal, which must contain a Broader Impacts section with focus on community engagement. BIOL A606, 698, and 699 promote the development of the professional skills needed to succeed in the workforce post-graduation.

   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)***
We would hope that our MS graduates would respond that their degree prepared them to communicate science in a variety of means, ranging from oral presentations to written records of their research.

- **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)***
Our thesis option MS students must publicly defend their thesis by giving a seminar of ~45 min in duration. The expectation for the seminar is that it is understandable by a senior biology student. Thus, students gain experience and preparation with communicating their complicated and technical work at a level that should be understandable by other academics. Likewise, our non-thesis MS students must orally present their capstone project to the public.

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.

   The MS degree for the Department of Biological Sciences has four student learning outcomes, and all were assessed this academic year.

   The successful candidate for the MS degree in Biological Sciences will:
   1. Have a working knowledge of the fundamental concepts of biology across a broad range of fields, and have a demonstrated mastery of at least one focus area within biology. - Met faculty expectations.
   2. Have a working knowledge of the principles of the scientific method, of the methods and technology of biological research, and of appropriate quantitative methods for the analysis of scientific data. - Met faculty expectations.
   3. Be capable of writing a publishable scientific paper, and presenting research findings at scientific conferences. - Met faculty expectations.
   4. Be prepared for a career in biological sciences, and/or able to pursue more advanced research opportunities. - Met 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 Dept. of Biological Sciences Graduate Affairs Committee works with MNS hub staff to gather data relevant to SLOs. Data is gathered from student annual reports, responses to queries sent to all students and faculty in the program, an exit survey sent to all graduates, and a Google sheet utilized to track student progress. Metrics analyzed include data on student publications and presentations at local, national, and international meetings, semesters to degree completion, number of students in the program, number of graduations, number of faculty advising students, and the number of students per faculty. SLOs are also assessed by a public oral thesis defense and by departmental review of the written thesis.

4. **What are the findings and what do they tell the faculty about student learning in your program?** *(750 characters or less)*
   The number of MS BIOS graduates has increased in the past 3 years. (7 in AY19/20; 8 in AY20/21; 9 in AY21/22). The implementation of the non-thesis MS option in Fall 2021 is contributing to the increase. 1 student completed the program in AY21/22 and 3 students are currently enrolled. Overall enrollment (24) is on par with past years indicating that demand for the program remains strong. Student success was demonstrated by the publication of 15 papers and 21 conference

presentations with graduate students as co-authors. Most importantly, the graduates that reply to our exit survey continue to indicate that they have gained employment in science research, or related fields, or are continuing their graduate research at the Ph.D. level.

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)*
In AY21/22 we further refined the Biological Sciences-specific thesis writing and formatting guideline that was developed in AY20/21. The guideline aids students in successful thesis writing and ensures consistency across the various research specialties represented by our faculty. In AY22/23 we will develop guidelines for the non-thesis option capstone project and exit exam. We will also continue to refine information flow to students and faculty regarding student degree progress by adapting the type of information that we are tracking. The Graduate Student Handbook, which was transitioned to an MNS student and faculty information website in 2019, is also continuously updated to reflect current university and departmental policies.

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)*

In order to meet demand, expand student opportunities and increase tuition revenue, the Department of Biological Sciences developed a non-thesis option (first offered Fall 2021). In AY21/22 we further revamped the program by adding an Accelerated MS degree option. To date, 1 student has successfully completed the non-thesis degree and 3 are currently enrolled. 1 student has applied to the accelerated MS option with a start date of Summer 2023. We expect enrollment in the Accelerated MS to grow with the return of undergraduate students to campus and in search of research experiences. We will assess the success of non-thesis and accelerated MS options in future years and will continuously refine the programs if necessary based on the assessment results.

STUDENT SUCCESS AND THE CLOSING OF EQUITY GAPS

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.**

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)*

Our MS program, with its strength in Biomedical and Ecosystem Health Sciences research, is contributing to fulfilling the diverse employment needs of the State of Alaska and beyond. Recent graduates have obtained positions in local (community) agencies, including: Biologist, USFWS; Lead Botanist, ACCS; Lead Vegetarian Ecologist, ACCS, Lead Terrestrial Ecologist, ACCS; Head of Ecological Research, Tribal Gov't of St. Paul Island, Research Tech, USFWS. We expect that these placements will cultivate additional collaboration and partnerships between our program and the agencies. Employment opportunities for our graduate students remain strong with no indication of market saturation.

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?** *(750 characters or less)*

The Department is commended for providing a range of degree options to students to best meet their needs. They are encouraged to develop guidance for the non-thesis option as they have for the thesis option.

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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 program's attention to preparing students for a variety of careers is appreciated. For example, the requirement of all students (thesis and non-thesis) to deliver live reports (either in seminar format or as a simple oral presentation) and to develop NSF-style research proposals is a plus. Student success is noteworthy and well documented.

Jenny McNulty

Dean's signature: _____   **Date:** 1/9/2023