Academic Affairs
University of Alaska Anchorage

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2021 ANNUAL ACADEMIC ASSESSMENT REPORT FORM
(Due October 15 to the dean)

PROGRAM SECTION (Due to the dean on October 15)

Submission date: 10/9/2021

Submitted by: Jennifer Brock, Associate Dean for Academics and Professor of Mechanical Engineering

Program(s) covered in this report: Mechanical Engineering BS

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

College: College of Engineering

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

Specialized accrediting agency (if applicable): Engineering Accreditation Commission of ABET
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)***

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From the required core, they would most likely say ME A438 Design of ME Systems, which is our capstone design class. Students may also optionally participate in internships, summer jobs, and part-time engineering employment while in school, and this would be an opportunity to develop these skills as well.

- **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)*

- **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)*

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.

   3. an ability to communicate effectively with a range of audiences
   4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
   7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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)***
   Student work was assessed directly in the courses below. Results were aggregated over the summer by the assessment coordinator. Other data collected included senior exit survey data each semester, and constituent surveys (to current students, alumni, employers, and faculty) to determine how well our Program Educational Objectives are meeting our constituent needs. Constituent surveys are deployed every three years. Faculty discussed the results on 8/25/2021.

Outcome	Course	Semester	Instructor
3	ME A441L	Fall	Brock
	ME A438	Spring	Peng
4	ME A441L	Fall	Brock
	ME A438	Spring	Peng

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7	ME A403	Spring	Sendi
	ME A280	Fall	Sendi

4. **What are the findings and what do they tell the faculty about student learning in your program? *(750 characters or less)***
   Faculty discussion included other outcomes not directly assessed this year, because we are in the third and final year of our usual 3-year assessment cycle, and are preparing for next year's ABET visit. This was also the first 3-year assessment cycle dedicated to ABET's new SOs (1-7), which replace ABET's old outcomes (a-k).
   The faculty came to the conclusion that we need to collect some additional course-level assessment data on Outcomes 1, 3 and 7, and have determined which instructors will carry this out.
   For the most part our students are doing well, but discussion also revealed some areas where we can improve instruction.

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)***
   ABET's new emphasis on complex engineering problems in its outcomes is probably the factor that has proved the most difficult for us to assess. Previously, we only had to assess our students' ability to apply math and science to engineering problems, which is assessable using single exam questions (as an example). Featuring and assessing complex problems throughout the curriculum will be a primary focus in future assessment cycles. The department is preparing for a curriculum overhaul as well, and the data collected using course-level assessment will inform this process.

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)

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☐ 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)***
   Since this is our first time through the new ABET outcomes, it is very difficult to monitor trends, but we expect to be able to pick this up again in the next assessment cycle.

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)***

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?** ***(750 characters or less)***
   We acknowledge the program's difficulty assessing ABET's new outcome involving complex engineering problems. This could potentially be a matter for college-wide discussion and sharing of ideas. Overall, the program has a robust assessment procedure based mainly in course-level assessment (CLA).

   This report does not require programs to comment on evaluation of program educational objectives (PEOs), but this item is required by ABET, so the program is reminded not to neglect it.

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 program is to be commended for having an assessment process that is flexible enough to allow SLOs to be re-evaluated within the same cycle as needed. ME faculty have just completed a curriculum overhaul with a goal for reducing degree credits to improve access to the degree. The new curriculum has decreased the number of credits required for the degree fom 131 to 126, and the program is commended for this.

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Dean's signature: DocuSigned by: Kenrick Mock 9F62E5B1BB71428... **Date:** 1/18/2022