Academic Affairs
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BIENNIAL PROGRAM STUDENT LEARNING OUTCOMES ASSESSMENT REPORT FORM – ASSESSMENT COMPLETED IN AY2023-2024 (Due to the dean on November 15)

Submission date: 10/11/2024

Assessment Plan covered in this report: Refrigeration and Heating OEC

College: Community and Technical College

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

Submitted by: Chad Petrie, Assistant Professor Refrigeration & Heating, cpetrie1@alaska.edu

1. **Please list and number the Program Student Learning Outcomes your program assessed in the past academic year. For each outcome, indicate one of the following: Exceeded faculty expectations, Met faculty expectations, or Did not meet faculty expectations.**

   1. Apply the fundamental laws of physics related to the Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC/R) industry. - Met faculty expectations.
   2. Understand and describe the function of individual components that make up HVAC/R systems. - Met faculty expectations.
   3. Work safely with tools, torches, electricity, refrigerants, heating fuels, and other equipment and material associated with HVAC/R work. - Met faculty expectations.
   4. Follow work practices that are environmentally responsible. - Met faculty expectations.
   5. Systematically troubleshoot HVAC/R systems. - Met faculty expectations.
   6. Apply municipal, state, and national mechanical codes to decisions involving the design, installation, operation, and maintenance of HVAC/R systems. - Met faculty expectations.

2. **Describe what your assessment process was last year 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. *(1000 words or less)***

   Our Assessment Plan uses tools which include two required standardized industry exams, pre/post-tests, and lab assessments. Analysis of the data consists of comparing the standardized industry exams with nationwide results, comparing the post-tests to the pre-tests, or comparing the students' lab work with industry expectations. With only a single faculty member, periodic consultation with other faculty members outside of the program regarding assessment methods and periodic consultation with industry professionals regarding industry standards are necessary.

3. **What are the findings and what do they tell the faculty about student learning in your program?** ***(1000 words or less)***

   The first standardized exam, the EPA Section 608 certification, had a pass rate of 83%, which is well above the national average of 59%. Our goal for this certification is to have an 80% certification pass rate, so this year's results were acceptable. The second standardized exam, the ESCO Employment Ready certification in Gas Heat (Open Book), resulted in an average of 85% correct answers, above the national average of 81%. This certification requires a score of 85% to obtain which resulted in 50% of the students obtaining certification. Those students that did not obtain certification missed the 85% benchmark by 2-6%. Our goal for this certification is to have an 80% pass rate, so we will be looking for ways to improve while continuing to monitor results, hopefully with larger groups of test subjects.

   Pre/post-test analysis shows the average score on the pre-test is 35% and the average on the post test is 58%. While this indicates that most students are learning a significant percentage of the material, it also shows that there is room for improvement. By analyzing the post-test for questions that are missed at a higher-than-average rate, we identify topics that should be covered more thoroughly to improve student retention of the material.

   All students met or surpassed industry expectations on their lab assessments.

4. **Based on the findings, did the faculty make any recommendations for changes to improve student achievement of the Program Student Learning Outcomes?** Yes

   i. **Please describe the recommended action(s), what improvements in student learning the program hopes to see, the proposed timeline, and how the program will know if the change(s) has worked. If no recommendations for changes were made, please explain that decision.** ***(1000 words or less)***

      We will increase in-class emphasis on topics found in the ESCO Employment Ready exam so that more students will have that certification upon graduation. This change should be able to be implemented rapidly, and should be reflected in increased scores or pass rates within the next few years.

5. **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 last year. *(If no options above were selected)*

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

No previous assessment cycles for this program

6. **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. *(1000 words or less)***

   N/A

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? *(200 words or less)***

   The Refrigeration and Heating faculty should continue to focus on the industry standards, including certification of students. It appears that the students are close for the second certification, with students missing the certification on the exam by between 2% and 6%. The faculty should continue to adjust course work and instruction techniques to improve the certification rate of the Gas Heat exam.

2. **Discuss what the program is doing particularly well in terms of its processes for the assessment and improvement of student learning, for example, the use of a common rubric or prompt, a signature assignment, etc. *(200 words or less)***

   The faculty should be commended, and while it sounds contrary to the statement above, for their work and overall scores verse the national average. Faculty are focused on the core aspect of an OEC, employable skills and student success. It is clear that the faculty embody these concepts.

Dean's signature:  **Date:** 1/15/2025