# Assessment Plan

**for Workforce and FOS Programs**

**Program/Track Name: \_\_\_\_\_\_\_\_\_\_\_\_HVAC (AAS Degree)**\_\_\_\_\_\_\_\_\_\_\_

**Description of Program-Level Learning Outcomes**

Please indicate the Program Learning Outcomes for the degree, degree track, or certificate below:

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| Program-Level Learning Outcomes |
| Program Learning Outcome 1: | Program graduates will work safely and responsibly within EPA guidelines and standards to evacuate and recharge refrigerant from HVAC systems  |
| Program Learning Outcome 2: | Program graduates will be able to identify, install, and use HVAC equipment, components and tools and understand their functions within the HVAC service industry  |
| Program Learning Outcome 3: | Program graduates will be able to demonstrate understanding of the principles of electricity as it applies to HVAC components and systems |
| Program Learning Outcome 4: | Program graduates will be able to demonstrate an understanding of the refrigeration cycle and air flow distribution process |
| Program Learning Outcome 5: | Program graduates will be able to read, interpret and communicate technical information including blueprints, diagrams, terminology and processes that are used in the HVAC field |
| Program Learning Outcome 6: | Program graduates will be able to apply troubleshooting skills using appropriate calculations and tools to diagnose, repair and perform maintenance on heating and cooling systems |
| Program Learning Outcome 7: | Program graduates will be able to demonstrate professionalism and customer service skills relevant to the HVAC service community and in communicating with HVAC clients |

**Section I: Technical Courses**

For **all technical courses** in the program, indicate in the table on the following page whether and/or how the course will support the program learning outcomes. You should include courses outside your discipline area and work collaboratively with those disciplines to determine whether and/or how those course(s) will support the program learning outcomes. **Please note** that it is understandable if courses from outside the discipline do not assess the program-level learning outcomes and serve only to introduce, practice and/or emphasize the program outcomes. It is also possible that technical courses outside of your discipline may not directly support the specific program-level learning outcomes you have identified.

***How to complete the program map:***

For each technical course in your program, please indicate whether any program-level learning outcome is introduced to students (I), practiced by students (P), emphasized for students (E), or formally assessed (A).

For example, if course WXYZ 1234 introduces students to one of the program outcomes, then enter “I” for that specific program outcome in the appropriate column. Please note that a course can be “I”, “P”, “E” and/or “A” in any program outcome. The labels in the following table apply SOLELY to the program level learning outcomes defined above. (It is NOT necessary for every course to address a program level learning outcome, and it is NOT necessary that Assessment or program level learning outcomes occur in every course.)

**Program Map ▼**

I=Introduced P=Practiced E=Emphasized A=Assessed

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Program Courses | Program Learning Outcome 1 | Program Learning Outcome 2 | Program Learning Outcome 3 | Program Learning Outcome 4 | Program Learning Outcome 5 | Program Learning Outcome 6 | Program Learning Outcome 7 | Program Learning Outcome 8 |
| HART 1401 |  | I | I,A |  |  |  |  |  |
| HART 1407 | I,P | I |  | I |  |  |  |  |
| HART 1441 | E,A | P | P | P,A | I | I | I |  |
| HART 1445 |  | P | P |  | P | P | I |  |
| HART 2431 |  | P | E |  | P | P |  |  |
| HART 2438 | P | E,A | P | P | P | E | P |  |
| HART 2345 |  | P |  | P | P |  | E,A |  |
| HART 2349 | P | P | P | P | P | E,A | P |  |
| HART 2341 | P | P | E | P | P | E | P |  |
| HART 2342 | P | P | P | P | P | P | P |  |
| HART 2334 |  | P | E |  | P |  |  |  |
| HART 2343 | P | P | P | P | P | P |  |  |
| HART 2358 |  | P |  | P | P,A |  | E |  |
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**Assessment Plan for Program Learning Outcomes**

Review existing assessment methods and current practices for collecting/gathering student data to identify direct (and possibly indirect methods of assessment). Remember that the data will need to be gathered, analyzed, and used to support the program’s continuous improvement processes.

**Note:** Because courses from other disciplines already have assessment plans in place, they do not have to be included in this assessment plan. Nonetheless, proposers must work collaboratively with these other disciplines to stay current and up-to-date with the assessment plans in these courses.

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| Program-Level Learning Outcome (e.g. Students will describe the impact of various cultures on American cuisine.) | Assessment Measure(s) and Where Implemented in Curriculum – Description of Instrument(s)/ process(es) used to measure results and indication of where the assessment will be collected in curriculum. (e.g. Essay on Cultural influences on American cuisine in CUIS 1300.) | Targets- Level of Success Expected(e.g. 80% of students score 2.5 or better on rubric for essay on cultures and cuisine.) |
| PLO #1 Program graduates will work safely and responsibly within EPA guidelines and standards to evacuate and recharge refrigerant from HVAC systems. | Departmental Lab Final in HART 1441-Residential Air Conditioning utilizing a departmental Grading Rubric to evaluate proper collection and handling of refrigerants | 80% of students will earn a grade of 75% or higher |
| PLO #2 Program graduates will be able to identify, install, and use HVAC equipment, components and tools and understand their functions within the HVAC service industry. | Departmental Lab Final in HART 2438-Air Conditioning Installation and Startup utilizing a departmental Grading Rubric to evaluate full system installation of a residential air conditioning system including start up and operation of a separate system.  | 80% of students will earn a grade of 75% or higher |
| PLO #3 Program graduates will be able to demonstrate understanding of the principles of electricity as it applies to HVAC components and systems. | Departmental Lab Final in HART 1401-Basic Electricity for HVAC utilizing a departmental Grading Rubric to evaluate the operational wiring of a 4-wire control system with 115-volt operating voltage on departmental training board.  | 80% of students will earn a grade of 75% or higher |
| PLO #4 Program graduates will be able to demonstrate an understanding of the refrigeration cycle and air flow distribution process. |  Students will be evaluated utilizing System Troubleshooting Lab in HART 1441-Residential Air Conditioning to diagnose and troubleshoot both refrigeration cycle and air handling components of a residential air conditioning system.  | 80% of students will earn a grade of 75% or higher |
| PLO #5 Program graduates will be able to read, interpret and communicate technical information including blueprints, diagrams, terminology and processes that are used in the HVAC field. | In HART 2358-Testing, Adjusting and Balancing HVAC Systems, students will interpret blue prints and evaluate proper air flow per Departmental Lab Exercise  | 80% of students will earn a grade of 75% or higher |
| PLO #6 Program graduates will be able to apply troubleshooting skills using appropriate calculations and tools to diagnose, repair and perform maintenance on heating and cooling systems. | Lab Exercise in HART 2349-Heat Pumps to demonstrate application of troubleshooting skills applied to an operational heat-pump system for both heating and cooling application. | 80% of students will earn a grade of 75% or higher |
| PLO #7 Program graduates will be able to demonstrate professionalism and customer service skills relevant to the HVAC service community and in communicating with HVAC clients. | Student will complete a full residential heating/cooling system design and customer presentation as final class project in HART 2345-Residential Air Conditioning System Design to be evaluated with Departmental Grading Rubric for required skillsets. | 80% of students will earn a grade of 75% or higher |