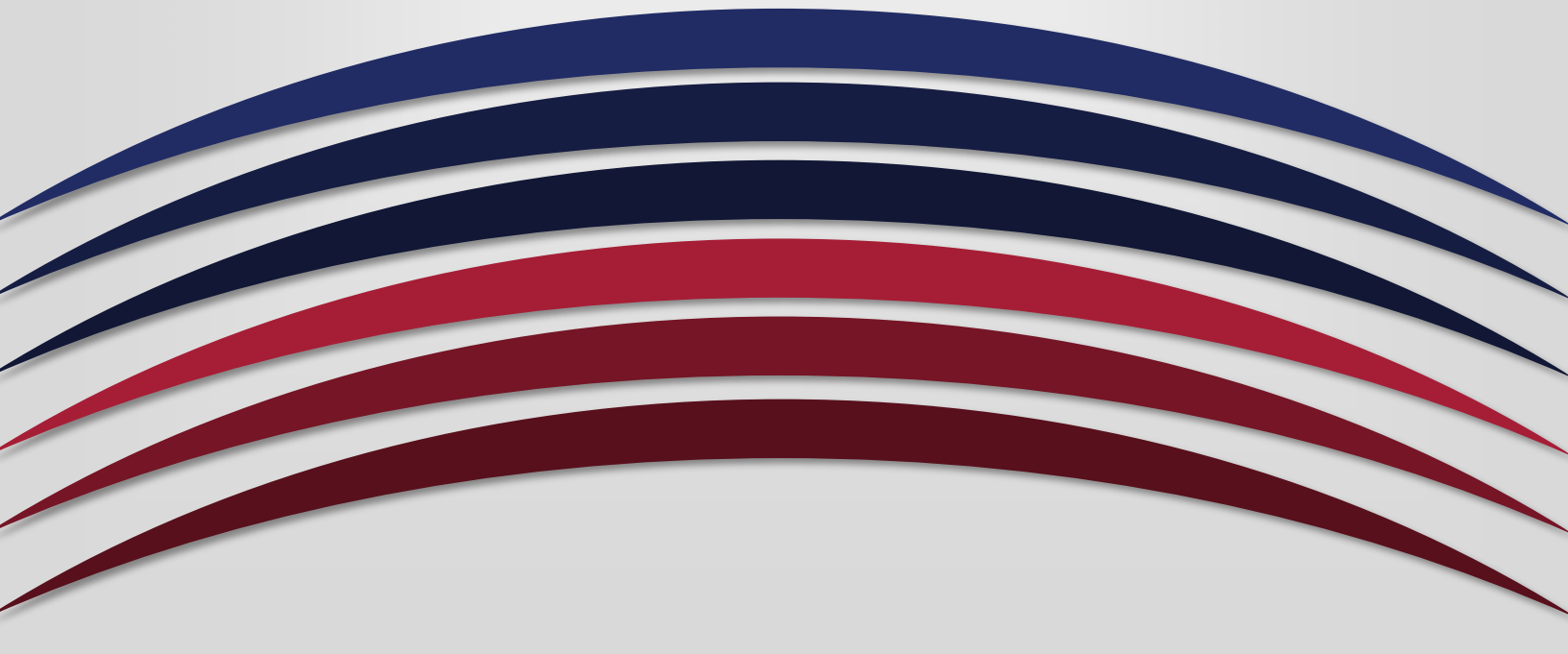


UNIVERSITY OF ARKANSAS PULASKI TECH

Assessment Report: Program Level

The University of Arkansas – Pulaski Technical College calls for each program (AS, AA, AAS, CP, and TC) to have an assessment plan for each academic year that includes the following:

- Program learning outcomes
- Procedures for assessing the achievement of student learning
- Procedures for analyzing and interpreting assessment results for the continuous improvement of the program.



A primary goal for each instructional department's assessment is to include at least one direct measure of student learning, which is accomplished usually through the use of locally developed tests, student portfolios, capstone assessment measures, embedded assignments, or through licensure exams and standardized national tests. In addition to direct measures, most areas may also use indirect methods to assess student achievement. Graduation rates and graduation and employer surveys are frequently used as indirect indicators of student achievement.

This form presents template of questions that must, at minimum, be addressed by instructional departments when filing an assessment plan. While an electronic version of this form will be made available, instructional departments may include additional information not specifically addressed in this form as long as the template questions are addressed.

Other Assessment Considerations:

- The College expects programs/departments/divisions to make curriculum changes and budget requests based in part upon assessment findings. Assessment of student learning should be a catalyst for quality instruction and improvement across the college community.
- All programs will be asked to submit an annual assessment report to the Assessment Committee by October 10 of each year. (If October 10 falls on a weekend, please submit reports on the following Monday.)
- For technical and occupational programs, please consider the role of your advisory committee in your student learning objectives.

This form must be completed by October 10 of each academic year. Complete each part of this form. Please follow highlighted instructions.

Part A: Identification and Student Learning Outcomes

1. Name of program: Heating, Ventilation, Air Conditioning and Refrigeration.
2. Name of individual compiling report: Robert Dixon
3. Date of submission: October 15th 2021
4. Academic year: 2021-2022
5. Is the assessment plan (*Check or highlight one*)
☐ an initial plan for the program ☐ a revision of an old plan x ☒ unaltered from previous year

6. Provide a mission statement of the program to include a description of the jobs/careers for which students are being prepared. Also, list the learning outcomes for your program.

**The primary learning outcomes required for graduation from this program include but are not limited to the following:*

1. *Each student will become knowledgeable of the natural laws that govern the operation of a refrigeration and air conditioning system.*
2. *Each student will master mathematical computations that will be used on a daily basis to describe machine faults or basic system design parameters.*
3. *Each student will learn to be environmentally responsible as they handle refrigerants, cleaning chemicals, and refrigeration oils, so as not to damage their own health or the health, wellbeing, and property of others.*
4. *Each student will learn to use basic hand tools that are required to troubleshoot and maintain modern refrigeration systems.*
5. *Each student will learn to use electronic aids in diagnosing and maintaining refrigeration and air conditioning systems.*

7. Complete the curriculum map below. Please mark an X in the map below to indicate which courses correspond with learning outcomes. If applicable, you can also use I, D, or M to indicate that a learning outcome is introduced, developed to foster more sophistication, or demonstrated at a level of mastery acceptable for graduation within the program. Additional courses may be marked with an R to indicate reinforcement of a program learning outcome.

List all supporting courses	Program Learning Outcomes						
	PLO #1	PLO #2	PLO #3	PLO #4	PLO #5	PLO #6	PLO #7
HVAC 1104	X	X	X	X	X	X	X
HVAC 1204	X	X	X	X		X	X
HVAC 2301	X	X	X	X		X	X
HVAC 2304	X	X	X	X		X	X
HVAC 2311	X	X	X	X		X	X
HVAC 2314	X	X	X	X		X	X
HVAC 2324	X	X	X	X		X	X
HVAC 2404	X	X	X	X		X	X
HVAC 2414	X	X	X	X		X	X
HVAC 2424	X	X	X	X		X	X
HVAC 2503	X	X	X	X		X	X
HVAC 2513	X	X	X	X		X	X

8. How does your assessment report connect to institutional learning outcomes?

To help with mapping your assessment data to the school's overall institutional outcomes, please check the boxes for the institutional outcomes directly associated with the assessment data presented in this report. For details on each outcome, see Appendix A.

- X☐ ILO #1 – Information Literacy
- X☐ ILO #2 – Technology Literacy
- X☐ ILO #3 - Communication
- X☐ ILO #4 – Critical Thinking
- X☐ ILO #5 – Quantitative Reasoning
- X☐ ILO #6 – Cultural Awareness
- X☐ ILO #7 – Professionalism

Part B: Assessment Methods and Data Sources

In this section of the assessment plan, learning outcomes for the program will be defined. Also, assessment methods and data sources for each outcome must be defined. Follow the instructions below to define and relate the program learning outcomes.

1. Complete the chart below or attach documentation of the assessment process that includes the data included below.

1. Safe work practices	all	Students are required every semester to pass a safe work practices exam with a score of 100%
2. Apply the principles and strategies recommended for installation of air conditioning systems, electric furnaces, fossil fuel furnaces, heat pumps and system controls	all	Students must prove they are learning by participating in various labs..
3. Apply the principles and strategies recommended to troubleshoot and service and repair air-conditioning systems, electric furnaces, fossil fuel furnaces, heat pumps and system controls.	all	must prove their proficiency by participating in various Students labs throughout their career here at UA-PTC
4. Use mathematical skills to solve problems in air conditioning, air distribution, heating and refrigeration	all	Student will be able to use mathematics to solve in field problems with HVAC equipment. Proficiency will be tested with rigorous classroom testing and lab exercises.
5. Handle refrigerant by completing EPA section 608 refrigerant handling training and testing for type "Universal" certification.	HVAC 1104	Each student will be tested based on EPA protocols and upon completion orf the appropriate testing will have earned type "Universal" certification. (active learning)
6. Effective communication	all	Effective communication is paramount for success in the fieldwork our students will be expected to do upon graduation. Therefore, each must learn to communicate in writing, and verbally. By stressing these skills in our lessons each day we instill these practices daily.

7. Critical thinking.	all	Trouble shooting HVACR units require a great deal of Critical thinking. Each student must understand the system of parts that make up a complete system. Lecture and lab contribute to this learning with special emphasis on solving installation and operational problems
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2. Please check or highlight any of the statements below that apply to your program assessment. Also, for each program outcome, if applicable, attach any assessment instruments, grading rubrics, or exemplars of student performance used at the program level.

☒ Rubrics and/or standardized tests were pilot-tested and refined.

☐ Rubrics were shared with students.

☐ Reviewers were calibrated with high inter-rater reliability or norming workshops.

3. Also discuss any additional data sources that may be used to gauge success (e.g. charts, graphs, surveys, rates).

ESCO Group, our EPA 608 testing organization keeps statistics on all who take the EPA 608 test. They give the program an indication of the number of students who ultimately obtain the required "Universal" certification.

4. Describe the process of analyzing the assessment data, including specifically discussion of results and collaboration among faculty in the program, for the last academic year. Also, check below any of the following statements that apply to your program assessment.

Each test gave an indication of the level of learning attained by the student.

☒ Comparative data used when interpreting results and deciding on changes for improvements.

☐ National standards, collaboration with sister programs and/or research data were used to ensure the program was held to high standards.

5. Complete the chart below or attach documentation of the assessment results that includes the data included below. Results should include total number of students assessed, the distribution of scores, relevant and detailed interpretation, student strengths and weaknesses, and whether the target was met.

Program Learning Outcomes	Assessment Results/Conclusion
1. Safe work practices	<i>Zero mishaps in class or in lab. 100% grade by students.</i>
2. <i>Apply the principles and strategies recommended for installation of air conditioning systems, electric furnaces, fossil fuel furnaces, heat pumps and system controls</i> Type your response here.	<i>In all classes there are written tests and work sheets. These are collected and graded. Students are required to participate in class by calling them to the board to demonstrate current topics in front of their peers. Lab requirements are graded.</i>
3. <i>Apply the principles and strategies recommended to troubleshoot and service and repair air-conditioning systems, electric</i>	<i>Students are tested regularly on the particular subject matter that is included in the curriculum at that time.</i>

	<i>furnaces, fossil fuel furnaces, heat pumps and system controls. Type your response here.</i>	
4.	<i>Use mathematical skills to solve problems in air conditioning, air distribution, heating and refrigeration.</i>	<i>Students are tested to determine if they know how to figure measurements like super heat, sub-cooling, combustion air requirements, and volume of air flow, just to name a few.</i>
5.	<i>Handle refrigerant by completing EPA section 608 refrigerant handling training and testing for type "Universal" certification.</i>	<i>Students must take a nationally required certification test before they can proceed to other more advanced classes in the program.</i>
6.	<i>Effective communication</i>	<i>Students must be well versed in the terminology of the HVAC/R trade. Without correct terminology, there can be no certainty of results.</i>
7.	<i>Critical thinking.</i>	<i>Proper operation of an A.C. unit can only be determined by using a few instruments. By comparing the reading of those two most important instruments, with the norms established by the manufacturer the technician must determine if the operation of the unit conforms to norms. If the determination is that the unit is not performing as required, then the technician must determine why it is not.</i>
8.	<i>Type your response here.</i>	<i>Type your response here.</i>
9.	<i>Type your response here.</i>	<i>Type your response here.</i>
10.	<i>Type your response here.</i>	<i>Type your response here.</i>

6. Describe your use of results, including planned improvements to the program and/or any follow-up studies that confirmed that changes have improved student learning.

If, by test scores, I see that students are not grasping the necessary concepts, I have included into my schedule extra time for instruction and tutelage. By changing the initial classes to what they are now, I believe that the students will be better prepared to proceed in the program.

7. What specific changes were implemented this year based on last year's results?

The major change that has been implemented this semester is that for the first time several classes have been offered online. This has eased the instructor crunch somewhat. Although not ideal, it has allowed upper level students to graduate on time with full credit.

8. What specific budgetary resources are needed for your program based on your assessment results?

At this time, my budget is inadequate for the operation of this department. The equipment in my main lab (Building "A" rm. 156) is old, out of date and dilapidated. The space was to be remodeled but plans for that have evidently been dropped due to budgetary constraints. The college was donated some equipment that can and will be used to replace old equipment but there are no matched systems, and very few pieces that will work with the limited electrical and Natural gas hook ups I have. Space is at a premium. I do not have a lot of room for classes in the labs. From a competitive point of view, a number of other campuses in our general geographic area have much better facilities to teach the same subjects. I have been fortunate that I have been able to hire adjunct instructors to teach classes that I was unable to teach. A second instructor is needed so that there is a consistency in our class offering.

9. Please write any additional information here that you think is pertinent to the assessment process for your program that assists stakeholders (i.e. administrators and standing committees) in understanding your report.

I convened a preliminary meeting to form an advisory committee as school started in August. I am hopeful that this committee will provide me with feedback concerning the type of training within the program the community expects of UA-PTC. Further, I think that it is imperative that the program be accredited nationally in order to lend credence to what the UA-PTC, H.V.A.C.R. department teaches. This will aid our students in obtaining well paying, relatively safe, and fulfilling employment in the future.

Appendix A – UA-PTC’s Institutional Learning Outcomes

1. Analyze information from credible sources. (Information Literacy)

This may include the ability to:

- Locate relevant information
- Evaluate the quality and usefulness of the information
- Synthesize the information.
- Communicate the information in an ethical manner consistent with the standards of the field or program of study.

2. Appropriately apply a variety of technology tools within one’s discipline. (Technology Literacy)

This may include the ability to:

- Acquire information,
- Solve real-world problems,
- Communicate, and/or
- Perform tasks and processes.

3. Communicate effectively with diverse audiences in multiple contexts. (Communication)

This may include the ability to:

- Develop, organize, and present orally well-supported and ideas formally and informally with consideration of community and context.
- Develop, organize, and present in written format well-supported ideas formally and informally with consideration of community and context.
- Clearly express ideas, information, and concepts in various modes and media, including the proper use of appropriate technology.
- Select and utilize means of communication appropriate for a variety of professional, civic, and social circumstances, environments, and communities.
- Consider diverse communities in multiple contexts.

4. Apply critical thinking skills to achieve a desired goal. (Critical Thinking)

This may include the ability to:

- Apply appropriate methods to solve problems or address issues.
- Use evidence to justify conclusions.

5. Use quantitative methods to solve problems. (Quantitative Reasoning)

This may include the ability to:

- Analyze and interpret quantitative information.
- Apply quantitative concepts and skills to solve real world problems.

6. Demonstrate awareness of cultural differences. (Cultural Awareness)

This may include the ability to:

- Explain how similar actions can be understood differently depending on cultural context.
- Evaluate the impact of culture on individuals and groups.

7. Demonstrate career readiness skills. (Professionalism)

This may include the ability to:

- Demonstrate personal accountability.
- Meet commitments.
- Demonstrate ethical behavior.

- Demonstrate teamwork.