PCCUA ASSESSMENT FORM

Division: Applied Technology
Program: Welding-IMPROVED ASSESSMENT PROCESS
Date: 2023-24 Academic Year

PCCUA ASSESSMENT GUIDING QUESTIONS

Please respond based on the departmental discussion of the program assessment and how those outcomes reflect what students are learning and what needs to happen to improve student learning. You may provide this in a narrative or bulleted format. However, you must respond to each question and these responses should be based on your program assessment discussions. Please respond in red font.

Program Student Learning Outcomes

A. Are the intended educational (learning) outcomes for the program appropriate and assessed appropriately?

Skills trade programs function differently from other academic programs. Some industries only require students to learn the fundamental skills needed for employment, while others expect students to obtain certification in specific, industry-defined areas. To ensure mastery, students take competency exams that evaluate their proficiency in the respective welding disciplines.

B. How are the faculty and students accomplishing the program's student learning outcomes?

Students develop their skills through hands-on lab activities. Each lab exercise is competency-based, meaning that students must demonstrate mastery of a particular skill before progressing. Practice is structured so that each skill builds upon the previous one, allowing students to gain confidence and proficiency step by step. Once a skill is mastered, students advance to the next required competency, ensuring a solid foundation and readiness for more complex tasks.

C. How are the program meeting market/industry demands and/or preparing students for advanced study?

Students first learn the essential welding skills required by industry to be competent in their field of study. They can then continue developing their expertise by pursuing welder certification in one or more of the major welding processes. After completing the required minimum field experience, students are eligible to enroll in the American Welding Society's Certified Welding Inspector (CWI) course. Upon successful completion of the course, they may take the CWI exam and achieve certification as a Certified Welding Inspector.

D. Do course enrollments and program graduation/completion rates justify the required resources?

The welding classes are entirely hands-on, and the program relies on a wide range of costly resources. Without these essential tools and materials, it would be impossible for students to acquire the skills needed to succeed in the welding industry, or even to qualify for a welding position. Many of our students have gone on to secure employment in the welding field.

E. Based on the Program SLO's how well are students learning at the course and program level? Based on your assessment outcomes, how do you know this?

As students advance in the welding program, they engage in a wide variety of hands-on welding performance tests on a daily basis. These tests are designed to progressively challenge their skills and measure their growth as they move to more complex tasks. Each student's work is evaluated using detailed rubrics, which provide specific criteria for grading and allow instructors to give structured, objective feedback. This system not only helps ensure that students are mastering each skill before advancing but also gives them a clear understanding of their strengths and areas for improvement, reinforcing continuous skill development and readiness for industry standards.

F. What are the changes you need to make to improved student learning?

Additional lab time is essential in the welding field because welding is a hands-on, performance-based skill. Success in this field requires repeated practice to build the precision, coordination, and muscle memory needed for consistent, high-quality work. The more students practice in the lab, the more their technique becomes second nature, allowing them to perform complex tasks efficiently and confidently. Continuous practice not only reinforces foundational skills but also prepares students to advance to higher-level welding processes and meet the rigorous demands of the industry.

G. What are the weak areas demonstrating a need for improvement?

Many welding students enter the program with gaps that can impact their progress and success in the lab:

1. Additional Lab Practice Time**:** Welding is a highly hands-on, performance-based skill that requires consistent practice to build proficiency and muscle memory. Students who do not dedicate extra lab time often struggle to master techniques, which slows their advancement and limits their readiness for industry demands.

2. Basic Math Skills**:** Welding requires precise measurements, calculations, and understanding of dimensions, angles, and tolerances. Students with weak basic math skills may have difficulty accurately laying out projects, interpreting blueprints, or performing calculations necessary for quality welds.

3. Reading Skills**:** Welding students must be able to read and interpret technical documents, safety protocols, and industry standards. Limited reading skills can hinder comprehension of instructions, blueprints, and proper welding procedures, which can affect both safety and skill development.

4. Preparedness for Class**:** Success in welding labs also depends on students coming prepared with the necessary materials, including paperwork, writing utensils, and proper safety clothing. Students who are unprepared may miss critical instruction, compromise their safety, or be unable to fully participate in hands-on learning, which can hinder skill mastery.

Addressing these gaps is essential to ensure that students can fully benefit from the program, achieve competency in welding skills, and be prepared for employment in the industry.

H. What are the strengths identified through assessment?

Students consistently progress to the next level of welding courses and have expressed strong interest in additional hands-on practice by attending other welding lab sessions outside their scheduled classes. This demonstrates their commitment to developing advanced skills and achieving higher proficiency. Several students have also requested the introduction of an advanced blueprint reading course, reflecting their desire to deepen their technical knowledge and better prepare for the complex demands of the welding industry.

Program Curriculum

A. Is the program curriculum appropriate to meet current and future market/industry needs and/or to prepare students for advanced study? Is that reflected in the assessment outcomes?

Yes. Students begin by learning the essential welding skills that are required by industry to ensure competency in their chosen field of study. Once they have mastered these foundational skills, they have the opportunity to further develop their expertise by pursuing welder certification in one or more of the major welding processes. After completing the required minimum amount of field experience, students are eligible to enroll in the American Welding Society's Certified Welding Inspector (CWI) course. Upon successful completion of the course, they may take the CWI exam, earning certification as a Certified Welding Inspector—a credential that signifies a high level of knowledge, skill, and professionalism in the welding industry.

B. Are program exit requirements appropriate?

Students are required to master a core set of laboratory competencies in each welding class. These competencies are carefully aligned with industry standards to ensure that students acquire the skills necessary to succeed in the workforce. The competencies remain consistent across courses, reflecting the unchanging expectations of professional welding practice. To guide instruction and assessment, the program follows the American Welding Society (AWS) D1.1 Structural Welding Code, which is widely recognized in the industry for establishing quality, safety, and technical standards in structural welding. This ensures that students are not only learning relevant skills but are also being trained to meet the same rigorous standards that employers expect in the field.

C. Are students introduced to experiences within the workplace and introduced to professionals in the field?

Students are introduced to real-world workplace experiences directly within the welding lab. Professional welders occasionally visit the classrooms to observe students, discuss industry expectations, and identify potential future employees. Instructors, who bring extensive experience from their respective fields, regularly share both past and current professional insights, providing students with practical knowledge and context beyond the classroom. Additionally, former students often return to share their own experiences, including the challenges and successes they have encountered in the industry, as well as current employment opportunities. These interactions expose students to the realities of the welding profession, help them build professional networks, and offer guidance on career pathways.

D. Does the program promote and support interdisciplinary initiatives?

While all students in the welding program are required to achieve the same core competencies and outcomes, the program also encourages interdisciplinary awareness by integrating skills and knowledge that are relevant across related technical fields. For example, students gain experience with blueprint reading, measurement, and safety practices that intersect with construction, fabrication, and mechanical technology. Additionally, collaborative projects and lab exercises often simulate real-world scenarios where welding interacts with other trades, helping students appreciate the interconnected nature of technical professions while maintaining consistent standards for all program participants.

E. Does the program support the college STACC skill development expected of all PCCUA graduates? Explain how you know this through assessment.

The welding program supports the STACC skill development goals expected of all PCCUA graduates by ensuring that students consistently apply industry-standard tools, techniques, and practices throughout their coursework. All students use the same tools of the trade, which promotes proficiency, safety, and adherence to professional standards. Skill mastery is systematically assessed through hands-on performance tests, competency evaluations, and rubric-based grading. These assessments provide clear evidence that students are developing the technical, problem-solving, and critical thinking skills outlined in the STACC framework. Assessment results demonstrate that students meet or exceed the expected competencies, confirming that the program effectively reinforces the foundational skills required of all graduates.

F. Does the program provide respect and understanding for cultural diversity as evidenced in the curriculum, in program activities, in assignment of program responsibly and duties; in honors, awards and scholarship recognition; in recruitment?

The welding program promotes respect and understanding for cultural diversity through its collaborative learning environment. Students work together on class projects, fostering teamwork, communication, and mutual respect among individuals from diverse backgrounds. All students are held to the same standards and are required to complete the same welding competencies, ensuring equity in skill development and opportunity. Additionally, program responsibilities, assignments, honors, and recognition—including awards and scholarships—are distributed based on performance and achievement, rather than any personal characteristics. Recruitment efforts are designed to be inclusive, welcoming students from all backgrounds, which reflects the program's commitment to diversity, equity, and fairness while preparing students to thrive in a professional workforce that values collaboration and respect for all.

Budget Requests Forms

Are more resources needed. If so, has there been an effort to acquire these resources through the college budgeting process?

The welding industry evolves rapidly, much like the computer industry, with modern welding machines incorporating sophisticated microprocessors and computerized controls. To ensure that students are learning the most relevant and up-to-date skills, it is critical that the program maintains equipment that reflects current industry standards. Without continual updates, students risk falling behind and being unprepared for the workforce. Phillips Community College has demonstrated a commitment to keeping the welding program current by updating equipment as needed, and there is confidence that this support will continue. The college budgeting process has been utilized to acquire these essential resources, ensuring that students have access to the tools necessary to gain proficiency and succeed in an ever-changing technical field.

What program requests did you make for the next year which are tied to needs related to assessment outcomes?

To support continued student success and respond to assessment outcomes, the welding program has requested resources for the ongoing upgrade of welding machines and the replenishment of both short-term and long-term consumables. Upgrading welding machines ensures that students are trained on equipment that reflects current industry standards, allowing them to develop skills that are directly applicable to the workforce. Maintaining an adequate supply of consumables—including welding rods, shielding gases, and safety materials—supports hands-on learning and ensures that students can complete all required competencies without interruption. These resources are critical to achieving the learning outcomes identified through program assessments and to maintaining the high level of skill proficiency expected of graduates.

STUDENT SUCCESS
GRADUATES PER YEAR

CERTIFICATE	WELDING FOCUS	2024	2023	2022	2021	2020	2019	2018
TC	**Welding Technology**	8	7	4	8	8	2	11
CP	**General Welding Techniques**	20	15	13	18	27	26	10
CP	**Inert Gas Welding**	18	15	11	18	18	12	17
CP	**Mild Steel Welding**	20	15	14	26	27	23	15
TOTAL AWARDS	**All Welding Awards**	66	52	42	70	80	63	53

Note: The Mild Steel Welding and the General Welding Techniques are the most common certifications. Most students acquire both. Often, students are offered employment with two certificates and choose to take a job instead of completing their TC. Note a drop in completions when we reduced the number of nights courses were available (2022-instructor retired)

WELDING
Fall 2023 and Spring 2024

COURSE	Course SLOs	Program SLOs	Benchmarks	Assessment	STACC	Assessment Results	Action
WG 115 Introduction to Welding	Students will be able to make welds with arc welding and gas metal welding equipment	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	70% of the group will score 80% or higher. There is little room for error in this field because of safety. 79% 19 of 24 Students	Does not meet expectation. Provide more practice time and have more peer teaching with demonstrations
WG 125 Arc Welding I	Students will be able to construct a lap joint, tee joint, corner joint and a square butt joint in flat and horizontal positions	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	70% of the group will score 80% or higher. There is little room for error in this field because of safety. 84% 16 of 19 Students	Meets Expectations
	Name the two types of operating adjustments found on arc welding machines.	4 Students will be able to explain the physical aspect of different metals	70% of the students will score 70% or higher	Students will be able to explain the physical aspect of different metals	Social & Community Responsibility	70% of the group will score 80% or higher. There is little room for error in this field because of safety. 110% 19 of 19 Students	Exceeds Expectations
WG 133 or WG 163 Welding Blueprint Reading or	Students will understand blueprint terminology	4 Students will be able to explain the physical aspect of different metals	70% of the students will score 70% or higher	Students will be able to explain the physical aspect of different metals	Social & Community Responsibility	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 100%	Meets Expectations

Basics of Blueprint						16 of16 Students	
	Students will be able to read and understand blueprints	1 Students will achieve a complete understanding of welding symbols and print drawing and reading	70% of the students will score 70% or higher	Students will achieve a complete understanding of welding symbols and print drawing and reading	Communication	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 100% 16 of 16 Students	Meets Expectation
	Students will be able to work with clients on specific projects	5 Students will work with a variety of clients	70% of the students will score 70% or higher	Students will work with a variety of clients	Commitments to diversity, equity and inclusion within the context of cultural engagement and understanding	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 78% 9 of 9 Students	Does not meet expectation. One student had a great deal of difficulty lowering the average. Only one student did not complete this sucessfully.
WG 135 ARC Welding II	Construct a lap joint, tee joint, corner joint and a square butt joint in the vertical and overhead positions	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 90% 10 of 11 Students	Meets Expectation
	Students will determine different welding techniques needed for specific projects	2 Students will use the correct procedure in setting up equipment and the skills used in welding	70% of the students will score 70% or higher	Students will use the correct procedure in setting up equipment and the skills used in welding	Analytical & Critical Thinking and Reasoning	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 90% 10 of 11 Students	Meets Expectation

WG 145 Inert Gas Welding I	Construct a mild steel lap joint, tee joint, corner joint and square butt joint in the flat and horizontal positions with the gas metal arc welding process	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 100% 12 of 12 Students	Meets Expectation
WG-165 Inert Gas II	Students will demonstrate welding applications of ferrous, nonferrous, stainless steel and alloy metals in the vertical and overhead positions.	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	70% of the group will score 80% or higher. There is little room for error in this filed because of safety. 88% 7of 8 Students Only a few students take this course because it is a TC course.	Meets Expectation
WG-155 Pipe Welding	Students will construct single vee joints (with no backup) in the flat, horizontal, vertical and overhead positions. Then progress into different piping positions	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	IS 100% 1 of 1 Students	Meets Expectation
WG-175 Certification Welding	Students will study and practice the qualifications to take the American Welding Society performance tests.	3 Students will use SMAW, TIG and MIG machines in both pipe and plate welding	70% of the students will score 70% or higher	Students will use SMAW, TIG and MIG machines in both pipe and plate welding	Technology Utilization	IS 60% 1 of 1	Additional Lab time Required

NOTE It is impossible to extricate SLOs from courses. Although all skills are integrated in all classes, some courses specifically focus on certain skills tied to the PLOs.