

Annual Report for Assessment of Outcomes 2012-13
PCC Welding Technology SAC
SAC Chair(s): Kevin Longueil, Liberty Olson

1. Changes implemented based on last years assessment.

- The welding SAC followed through with their plan to revise the safety test to “clean up” the awkwardly worded questions (16 and 27). Also the remaining questions that were frequently missed were addressed through an instructional shift in which the faculty spent more time addressing these issues. The Welding Department is still collecting data in order to illustrate the success we’ve had with this revision.
- We did not follow through with the plan to add projects to our WLD 151 packet to cut down on the number of visually rejected certification plates. However, based on our finding from last year’s assessment, the welding instructors would spend more time coaching our students to produce a more visually acceptable test plate. As a result we’ve had significantly fewer visual rejects.
- The Welding Department has not come up with any new method to fully assess work ethic and professional competence. However, we have starting using a new system to track student’s hours as suggested by the previous years assessment.

2. Welding AAS outcomes Assessed

- Ability to think critically and creatively to trouble shoot and solve welding problems
- Interpret blueprints to accurately fabricate a product
- Cut, prepare and assemble projects to specified tolerances.

These Welding AAS outcomes relate to the College Core Outcomes of

- Critical Thinking
 - Analyze and draw inferences from numerical models.
 - ✓ Interpret a technical drawing
 - ✓ Accurately layout pieces using various measuring tools.
- Problem-solve
 - Identify and define central and secondary problems.
 - ✓ Determining how to weld in difficult areas
 - ✓ Troubleshooting and remedying issues with arc blow.
- Professional Competence
 - Perform tasks, procedures, and processes with competence.
 - ✓ Each step of the process is scrutinized to ensure all tolerances are being met and all welds meet national standards.
- Apply Concepts, Skills, and Processes
 - Produce a product, project, or presentation in an academic, professional, or technical setting.
 - ✓ Finished product should be free of defects and meet or exceed all industry standards

In order for the student to reach their first benchmark, which encompasses all of these outcomes, each project will be evaluated and graded from a “Practical Welding Final”. Using a grading rubric that establishes hold points, the instructor will be able to evaluate every step of the fabrication process to ensure the print is interpreted correctly and cutting and tacking are completed within tolerances.

Weld 113 is the third class in the welding program for the student seeking an AAS degree. We chose this packet’s practical final and grading rubric to demonstrate the way we map all three outcomes for this year’s assessment

Blueprint interpretation and material layout/cutting are the first two hold points on the rubric. These two steps allow faculty to determine if the student is equipped to understand the print as well as extract critical information in order to successfully fabricate his or her project.

The prints have implied dimensions, so the student must use mathematics to derive the correct dimensions. The student will then create a material cut list, and subsequently; cut out his or her pieces to the correct dimensions within the specified tolerances. An instructor will then evaluate and score the student for his or her print interpretations as well as parts cut.

Fit-up and weld are the final two hold points on our grading rubric. Here, a student will be given the opportunity to think creatively to successfully tack his or

her project to the correct dimensions. Each student will then develop a creative approach to his or her welding process to include a fundamental task of starting and stopping in the correct place, as well as successfully positioning themselves correctly to wrap corners where applicable.

During the welding process a student will be expected to trouble shoot potential welding problems associated with arc blow and out of position welding. The student will be required to critically think through decisions about the welding process to ensure the welds are even and of the correct size. The weld quality will always be held to AWS D1.1 structural welding codes.

Any weld on the final deemed unacceptable by AWS standards will be rejected and the final must be reworked until the weld is built to standards. The final will be graded on both structural and aesthetic standards ensuring all welds visually meet D1.1 structural welding codes. Then the reworked final will be graded both structurally and aesthetically to D1.1 standards assuring all welds will be clean from weld splatter and slag.

To support this summary we've included a copy of the wld 113 practical final blueprints and hold points grading sheet.

Grading Traveler for the WLD 113 Practical Exam

Name: _____ Date _____

Hold Points are mandatory points in the fabrication process, which require the inspector to check your work. You will have the following hold points that you instructor will check

<i>Points Possible</i>	<i>Hold Points</i>	<i>Instructor's Evaluation</i>
5 points	Blueprint Interpretation and Material Cut List 5 points = 0 errors, all parts labeled and sized correctly 3 points = 1 error in part sizing and/or identification 2 points = 2 errors or more rework required (max points)	
10 points	Material Layout and Cutting (Tolerances +/- 1/16") 10 points Layout and cutting to +/-1/16" Smoothness of cut edge to 1/32" 7 points Layout and cutting to +/- 1/8" Smoothness of cut edge to 1/16" 5 points (Rework required max points) Layout and cutting to +/-3/16" Smoothness of cut edge to 3/32"	
10 points	Fit-up and Tack weld (Tolerances +/- 1/16") 10 points Tolerances +/- 1/16" Straight and square to +/-1/16" 7 Points Tolerances +/- 1/8" Straight and square to +/-1/8" 5 Points (Rework required - Max points) Tolerances +/- 3/16" Straight and square to +/-3/16"	
15 points	Weld Quality Subtract 1 point for each weld discontinuity, incorrect weld size and incorrect spacing sequence.	
28 points	<i>Minimum points acceptable. This equates to the minimum AWS D1.1 Code requirements.</i>	
	Total Points	/40

3. Information about results

The data collected came from five different instructors and represents 60% of the students enrolled in WLD 113 for Winter 2013 (students not included in this data either stopped attending before attempting their 113 final or their final rubric was not available). The inter-rater reliability of the hold points is high due to the fact they are all either physically measurable or scrutinized by very specific national standards. According to the data none of the students scored below the minimum overall points acceptable of 28/40.

	Blueprint	Layout &	Fit-up &	Weld
	Interpretation	Cutting	Tack	Quality
student 1	5	8	10	11
student 2	5	10	10	13
student 3	5	10	10	14
student 4	5	7	8	9
student 5	5	10	10	13
student 6	5	10	10	10
student 7	5	9	10	12
student 8	4	10	7	13
student 9	5	9	10	14
student 10	5	10	9	14
student 11	5	7	8	11
student 12	5	7	9	14
student 13	5	8	10	12
student 14	5	9	9	13
student 15	5	7	7	10
student 16	4	8	10	11
	4.88	8.69	9.19	12.13
	98.00%	87.00%	92.00%	81.00%

The hold points that could use some work are Layout & Cutting and Weld Quality. This seems appropriate given the student relative newness to these processes. Oxy-fuel cutting and welding are two skills that require development on multiple level of which can only be achieved through repeated practice.

4. Changes that should be implemented based on this assessment.

At this time I don't see any reason in changing this method of assessment. Our standards for evaluating all practical finals are based on national welding

standards and is an ideal way of mapping the outcomes assessed for this year.

5. Reflection

The Welding Department feels the WLD 113 final rubric is a good assessment tool for mapping these outcomes. A good supplement to this assessment could be to collect the same data from a more advanced, Welding AAS required class to compare the hold points with that of the WLD 113 final to insure the students are improving on the Layout & Cutting, and Weld Quality hold points.