Comprehensive Program Review Report (Narrative)
College of the Sequoias
Program Review - Welding

Prepared by: Frank Tebeau

What are the strengths of your area?:
1) All courses within the welding department have up to date SLO's and PLO's. All SLO's and PLO's have been assessed. All assessments have been reviewed both by instructor and our industry partners. Changes to both of these have been suggested by industry partners and have improved student success and heritability.

2) The new facilities that the welding program moved to one year ago are spectacular and have allowed for increased enrollment opportunities (capacity) for students, increased opportunities for employer interaction and the possibilities for improving the depth of the curriculum as requested by industry.

3) The greatest improvement of the last year has not been the new shop, it has been the addition of a full-time temporary welding instructor, who is grant funded. With the addition of this new instructor, although only temporary, the welding program completers have enjoyed a greater first time job hiring success. Over the past year twenty two welding program completer have been hired by local manufacturing and agriculture businesses.

5) The new facility has given Welding the base facility (space) to increase student opportunities for industry demanded technologies.

What improvements are needed?:
1) Student improvement in the application of welding skills to the fabrication and manufacture of welding steel projects as evidenced by discussions with industry partners.

2) We have a facility that allows us to teach the science of welding and the beginning of application of that science. We need to be able to train students to use that technology to it's ultimate goal of manufacturing and fabricating usable industry items. For example, we need to move our curriculum to include the ability to work with a customer to do the following things: estimate the cost, choose the right material (type, load capacity and finish), intrepret industrial blueprints, cut, bend and shape material to be used, square, plumb and flush pieces of material to be joined, select and apply appropriate joining process, and then actually fabricate the item.

Without question the greatest improvement needed is the addition of a full time PERMANENT welding instructor. The increase in enrollment and the increase in industry ties are directly related to a full time welding instructor being on staff.

5) The new facility has given Welding the base facility (space) to increase student opportunities for industry demanded technologies, but the limiting factor is a full-time instructor.

4. Upgrade to electrical power needed in fabrication area.

5. Upgrade and relocation of compressed air to testing area in welding lab.

6. Upgrades would improve safety by eliminating trip and fall hazards of multiple temporary electric cords.

Describe any external opportunities or challenges:
Opportunities: Industry partnerships cultivated this last year have improved opportunities for our students for job placement after completion and internships during their education. The new facilities are spectacular and have brought the support and interest of multiple new industry partners. The opportunity to to continue to evolve the curriculum and expand laboratory practices to include the multiple skills and technology required by industry.

Challenges: The greatest external challenges are the flip side of the opportunities. That is, industry expects this education program to be flexible enough to offer the changing training that they require for their employees. Flexibility continues to be a challenge.

Overall Outcome Achievement:
Overall performance in the welding program both SLOs and PLOs are on track to meet industry demands for new entry level positions. Review of assessments have occurred in all relevant courses and continue to show that students are meeting course goals at 70% level or higher. PLOs indicate that students are succeeding at or above college average. (See assessment results and improvements for Welding 161, 162, 171 and 172 and welding certificate).

The greatest improvement recommended in the assessment cycle and in conversations with employers is the application of welding skills to the fabrication and manufacture of welding steel projects as evidenced by discussions with industry partners. Additionally, it is clear from our assessments, that students who get real-world industry experience and are exposed to employer partners are motivated and engaged at a higher level in our learning outcomes. The addition of the grant funded full-time welding faculty member is helping in this area.

Changes based on outcome
After reviewing the results of the outcome assessments and identifying strengths and weaknesses the welding faculty has identified the following potential ways to
achievement: support and improve student achievement in the welding program.

1. Go beyond the science and technology of joining metals together and advance to the fabrication and manufacture skills that moves students’ critical thinking from purely the manipulation of the technology to the higher level of applying that technology to the manufacture of usable items.

2. Addition of resources that will allow us to use technologies identified by industry and, thus, allow laboratories to better serve students and improve their outcome assessments.

3. Minor changes to assessments that will allow students to demonstrate more accurately their industry based skill levels.

Outcome cycle evaluation: The welding department has assessed all courses and reviewed all assessments as listed in trackdat for Fall 2013 and Spring 2014. Courses for assessment in Fall 2014 and Spring 2015 are Welding 172, 175, 276, 273. Certificate and AS Degree for Welding shall be assessed and evaluation in Fall 2014 Spring 2015.

Action: Program relevance with industry

Advance the curriculum to allow student improvement in the application of welding skills to the fabrication and manufacture of welding steel projects as evidenced by discussions with industry partners. We have a facility that allows us to teach the science of welding and the beginning of application of that science. However, with the ever changing technology upgrades, we have to be able to advance students to the next level and must be to train students to use that technology to it’s ultimate goal of manufacturing and fabricating usable industry items. For example, we need to move our curriculum to include the ability to work with a customer to do the following things: estimate the cost, choose the right material (type, load capacity and finish), intrepret industrial blueprints, cut, bend and shape material to be used, square, plumb and flush pieces of material to be joined, select and apply appropriate joining process, and then actually fabricate the item.

The new facility has given Welding the base facility (space) to increase student opportunities for industry demanded technologies, but the limiting factor is a full-time instructor that allows those new technologies to be implemented.


Start Date: 05/28/2014

Completion Date: 01/30/2015

Status: New Action

Identify related course/program outcomes:

PLO: Correct Joint process-Choose the correct joint prep process for the weld metal joints and complete that joint prep to industry standards.

SLO: Weld 172 # 1: By the end of this class students will be able to apply the concepts of GTAW to ferrous and nonferrous metals.

SLO: Weld 162 #3: At the end of this course students will be able to complete industry developed welding procedure sheet (WPS).

Person(s) Responsible (Name and Position):

Frank Tebeau-Department Chair

Rationale (With supporting data):

With the new larger facilities, even with their challenges, the welding program has seen a revival in industry partnerships. These partnerships have included equipment and financial support for this program, internship opportunities for students and most importantly career placement for our completers. It has also allowed us to begin to think about using the capacity of the facility for integrating new technologies requested by industry. All this improvement has been primarily accomplished because of the addition of a full time TEMPORARY welding instructor. The loss of this instructor will reverse all positive gains made over the last year and a half.

Priority: High

Safety Issue: Yes

External Mandate: No

Add Resource Request for Action

<table>
<thead>
<tr>
<th>Resource Description</th>
<th>Why is this resource required for this action?</th>
<th>Notes (optional)</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>New full time permanent welding instructor.</td>
<td>As stated in the beginning of this document and supported by enrollment data, student success data and by increased industry partnerships and support this full time instructor is needed to continue and maintain improvements to the welding program.</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

Resource Type: 

Faculty- New/Replacement
Action: Industry Driven Technology
Expand and improve students opportunity to develop higher level thinking skills, design concepts, material science and application concepts and industry quality manufacturing standards.

Start Date: 08/18/2014
Completion Date: 05/29/2015
Status: New Action

Identify related PLO: Drawings: Produce simple effective orthographic drawings used for cutting, fit-up and welding of metal weldments. These drawings shall include the use of the American Welding Society welding symbols. All drawings shall be done to industry standards.

SLO: Welding 276: Outcome #4: Upon completion of this course students will be able to demonstrate proper lay out and fit up of material for their laboratory projects.

Person(s) Responsible (Name and Position): Frank Tebeau

Rationale (With supporting data): The new welding shop is designed to offer students practical application of certified welding skills in metal manufacturing. Portion of shop designated as fabrication/manufacturing area has inadequate power for large welding machines. Industry partners indicate students need to possess manufacturing/fabrication skills at a higher competency level than currently offered. Practices taught utilizing this action will increase students ability to be hired.

Priority: High
Safety Issue: Yes
External Mandate: No

Add Resource Request for Action

<table>
<thead>
<tr>
<th>Resource Description</th>
<th>Why is this resource required for this action?</th>
<th>Notes (optional)</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding to expand electrical power to manufacturing/fabrication area. Contractor to be hired to expand electrical power.</td>
<td>Expanding the electrical power is required to meet the action statement. Without the additional electrical power, we are limited in providing the higher level skills demanded by manufacturing and fabrication industry.</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

Resource Type: Facilities

Action: Pneumatic technology
Expand pneumatic technology to allow students to apply industry demanded pneumatic applications.

Start Date: 08/18/2014
Completion Date: 05/29/2015
Status: New Action

Identify related PLO: Correct Joint processes: Choose the correct joint prep process for the weld metal joints and complete that joint prep to industry standards.

course/program outcomes:
SLO: Welding 172 Outcome #3: Upon completion of this course students will be able to utilize their welding procedure sheet to complete all welding lab assignments.
SLO: Welding 275 Outcome #3: Upon completion of this course students will be able to apply and define the industry codes to their laboratory weldments.

Person(s) Responsible (Name and Position): Frank Tebeau

Rationale (With supporting data): Industry certification offered in many welding courses requires weldment examination and testing by a certified welding inspector. Inspection devices are air operated. Relocation of air outlets to inspection area is necessary to maintain industry inspection standards. These standards when met lead to industry certification for our students.
### Add Resource Request for Action

<table>
<thead>
<tr>
<th>Resource Description</th>
<th>Why is this resource required for this action?</th>
<th>Notes (optional)</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding for material and installation of compressed air lines and fittings.</td>
<td>Improve student opportunities for the application of higher level thinking skills as demanded by industry for pneumatic technologies.</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>