

Pathways' Courses

**Project Based Learning (PBL) Welding Supported by United Technologies Center (UTC)**

**Stage 1- Desired Results**

**Established Goal(s) RSU 24 Proficiency-based Graduation Standards:**

**ELA & OSHA on Mr. Belyea's MC Marine Trades Map and Tracker.**

**Career and Education Standards:**

Self Knowledge:

- A. Analyze interests, skills, habits of mind, and experiences to maintain a positive self-concept and to aid in making career and life decisions. (MLR.CED.9-12.A1)
- B. Demonstrate and evaluate strategies to improve personal traits, behaviors, and the belief that one can successfully complete tasks/goals required for success in career and school. (MLR.CED.9-12.A2)
- C. Demonstrate behavior and decisions that reflect work values/needs. (NCDG.PS1.A4)

Interpersonal Relationships and Life Skills:

- A. Demonstrate organized, purposeful, and effective communication skills. (NCDG.PS2.A1; GP.9-12.A1)
- B. Demonstrates the ability to get along well with others and work effectively with them in groups. (NCDG.PS2.A4)
- C. Assess how personal educational achievement and performance will transfer to the workplace. (NCDG.CM3.R3)

Ability and Goal Setting:

- A. Demonstrate adaptability and flexibility when initiating or responding to change. (NCDG.PS3.A6)
- B. Analyze and evaluate strategies for addressing diverse and changing societal and global economic needs that influence personal decision-making for workplace success. (CED.9-12.C4)
- C. Identify short-term and long-term career goals (e.g., education, employment, and lifestyle goals). (NCDG.CM1.K3)
- D. Identify economic conditions that affect personal career plans. (NCDG.CM5.K2)

**HOW+L**

Organization and Planning:

- A. Applies knowledge to set goals and make informed decisions. (MLR.GP.B.2)
- B. Recognizes the need for information, locates resources and opportunities, evaluates them, and seeks results. (MLR.GP.B.1; MLR.GP.C.5; MLR.GP.E2)
- D. Gains and applies knowledge across disciplines and learning contexts to real-life situation with and without technology. (MLR.GP.E.1)

Task Initiation and Execution:

- A. Demonstrates initiative and independence. (MLR.GP.B.4)
- B. Demonstrates reliability and concern for quality. (MLR.GP.B.6)
- C. Uses information and technology to solve problems. (MLR.GP.C.6)

Flexibility and Persistence:

Applies knowledge in new contexts. (MLR.GP.B.3)

Generates a variety of solutions, builds a case for a best response and critically evaluates the response. (MLR.GP.C.4)

Interpersonal Skills:

- A. Demonstrates organized and purposeful communication in large or small groups. (MLR.GP.A.1)
- B. Accepts responsibility for personal decision and actions. (MLR.GP.D.2)

C. Demonstrates ethical behavior and the moral courage to sustain it. (MLR.GP.D.3)

D. Understands and respects diversity. (MLR.GP.D.4)

**Math Standards:**

Problem Solving -

B. Check that results are reasonable. (CCSS.M.MP.1)

Modeling with Mathematics -

A. Represent a situation using diagrams, equations, and/or expressions (de-contextualize). (CCSS.M.MP.2)

B. Interpret solutions in terms of the original situation (contextualize). (CCSS.M.MP.2)

C. Keep track of assumptions and revise them as necessary. (CCSS.M.MP.4)

Critical Reasoning -

A. Assemble individual facts and assumptions to create a logical argument. (CCSS.M.MP.3)

Use of Tools -

A. Choose a tool wisely. (CCSS.M.MP.5)

B. Use tools wisely. (CCSS.M.MP.5)

Precision -

A. Attend to precision in communication. (CCSS.M.MP.6)

B. Attend to precision in calculation. (CCSS.M.MP.6)

**Science Standards:**

Inquiry -

C. Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design. (NGSS.SEP.I.1)

Modeling -

F. Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system. (NGSS.SEP.M.1)

Experimental Design -

F. Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution. (NGSS.SEP.D.1)

Computation -

D. Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m<sup>3</sup>, acre-feet, etc.). (NGSS.SEP.C.1)

Scientific Solutions -

D. Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. (NGSS.SEP.SS.1)

**Students' Understanding(s):**

**I can...**

1. Analyze interests, skills, habits of mind, and experiences to maintain a positive self-concept and to aid in making career and life decisions. (MLR.CED.9-12.A1)
2. Demonstrate and evaluate strategies to improve personal traits, behaviors, and the belief that one can successfully complete tasks/goals required for success in career and school. (MLR.CED.9-12.A2)

**Essential Question(s):**

**What would be my career choices be after completing this course?**

**How will I keep myself safe?**

**How do Math and Science Standards factor**

3. Demonstrate behavior and decisions that reflect work values/needs. (NCDG.PS1.A4)
4. Demonstrate organized, purposeful, and effective communication skills. (NCDG.PS2.A1; GP.9-12.A1)
5. Demonstrate the ability to get along well with others and work effectively with them in groups. (NCDG.PS2.A4)
6. Assess how personal educational achievement and performance will transfer to the workplace. (NCDG.CM3.R3)
7. Demonstrate adaptability and flexibility when initiating or responding to change. (NCDG.PS3.A6)
8. Analyze and evaluate strategies for addressing diverse and changing societal and global economic needs that influence personal decision-making for workplace success. (CED.9-12.C4)
9. Identify short-term and long-term career goals (e.g., education, employment, and lifestyle goals). (NCDG.CM1.K3)
10. Identify economic conditions that affect personal career plans. (NCDG.CM5.K2)
11. Apply knowledge to set goals and make informed decisions. (MLR.GP.B.2)
12. Recognize the need for information, locates resources and opportunities, evaluates them, and seeks results. (MLR.GP.B.1; MLR.GP.C.5; MLR.GP.E2)
13. Gain and apply knowledge across disciplines and learning contexts to real-life situation with and without technology. (MLR.GP.E.1)
14. Demonstrate initiative and independence. (MLR.GP.B.4)
15. Demonstrate reliability and concern for quality. (MLR.GP.B.6)
16. Use information and technology to solve problems. (MLR.GP.C.6)
17. Apply knowledge in new contexts. (MLR.GP.B.3)
18. Generate a variety of solutions, builds a case for a best response and critically evaluates the response. (MLR.GP.C.4)
19. Demonstrate organized and purposeful communication in large or small groups. (MLR.GP.A.1)
20. Accept responsibility for personal decision and actions. (MLR.GP.D.2)
21. Demonstrate ethical behavior and the moral courage to sustain it. (MLR.GP.D.3)
22. Understand and respects diversity. (MLR.GP.D.4)
23. Check that results are reasonable. (CCSS.M.MP.1)
24. Represent a situation using diagrams, equations, and/or expressions (de-contextualize). (CCSS.M.MP.2)
25. Interpret solutions in terms of the original situation (contextualize). (CCSS.M.MP.2)
26. Keep track of assumptions and revise them as necessary. (CCSS.M.MP.4)
27. Assemble individual facts and assumptions to create a logical argument. (CCSS.M.MP.3)
28. Choose a tool wisely. (CCSS.M.MP.5)
29. Use tools wisely. (CCSS.M.MP.5)
30. Attend to precision in communication. (CCSS.M.MP.6)

**into my welding skills?**

31. Attend to precision in calculation. (CCSS.M.MP.6)
32. Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design. (NGSS.SEP.I.1)
33. Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system. (NGSS.SEP.M.1)
34. Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution. (NGSS.SEP.D.1)
35. Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m<sup>3</sup>, acre-feet, etc.). (NGSS.SEP.C.1)
36. Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. (NGSS.SEP.SS.1)

### Stage 2-Assessment Evidence

**Performance Task(s):** Standards and PI are identified on each task.

November 8  
 November 10  
 November 15  
 November 17  
 November 29  
 December 1  
 December 6  
 December 8  
 December 13  
 December 15  
 December 20  
 December 22

Some students will take the Welding Certification test immediately following the UTC course and some will continue to hone their skill level through Mr. Belyea's Marine Trades Program.

**Other Evidence: (Quiz, test, written assignment)**

Standards and PI are identified on each assessment evidence.

OSHA :

*Technology = 1.4 Quality Control and Troubleshooting*

**46.0201.3.1=Core Standards and Competencies, Basic Safety**

*Reading = RST11-12.1*

*Writing = WHST.11-12.9*

*Self knowledge = PS1.A4*

**Pre-requisite for PBL Welding Course- OSHA 10 (students assessed through Marine Trades MC Map and Tracker.)**

There are ten Units to complete with notes  
[Introduction to OSHA PPT](#)

[Walking and Working Powerpoint](#)  
[Egress student notes](#)  
[Egress Powerpoint](#)  
[Bloodborne Student Notes](#)  
[Bloodborne Powerpoint](#)  
[Flammable PPT](#)  
[Machine Guard PPT](#)  
[Lockout /Tagout PPT](#)  
[Electrical PPT](#)  
[Personal Protection Equipment](#)  
[Hazardous Communication](#)

[Assessment and Rubrics folder](#)  
[OSHA 10 Certificates show proficiency in ELA](#)

Stage 3-Learning Plan

**Learning Activities/ Formative Assessments/ Observations and Picture Evidence.**

Keagan, Cody, Hunter, Robert, Isaac, Josh Stevens, Scylvia, James Worcester

November 8 Safety and Introduction

November 10 Vertical Stick Welding

November 15 Horizontal Stick Welding

November 17

November 29

December 1

December 6

December 8

December 13

December 15

December 20

December 22

Rubric Pathways' PBL Welding 2016 Student Name \_\_\_\_\_

Standard/PI	4 Notes/ Evidence I can teach others to...	3 Notes/ Evidence I can....	2 Notes/ Evidence With help, I can...	1 Notes/ Evidence
<p><b>Career and Education Standards:</b>  <u>Self Knowledge:</u></p> <ol style="list-style-type: none"> <li>Analyze interests, skills, habits of mind, and experiences to maintain a positive self-concept and to aid in making career and life decisions. (MLR.CED.9-12.A1)</li> <li>Demonstrate and evaluate strategies to improve personal traits, behaviors, and the belief that one can successfully complete tasks/goals required for success in career and school. (MLR.CED.9-12.A2)</li> <li>Demonstrate behavior and decisions that reflect work values/needs. (NCDG.PS1.A4)</li> </ol>				See Mrs. Walsh
<p><u>Interpersonal Relationships and Life Skills:</u></p> <ol style="list-style-type: none"> <li>Demonstrate organized, purposeful, and effective communication skills. (NCDG.PS2.A1; GP.9-12.A1)</li> <li>Demonstrates the ability to get along well with others and work effectively with them in groups. (NCDG.PS2.A4)</li> <li>Assess how personal educational achievement and performance will transfer to the workplace. (NCDG.CM3.R3)</li> </ol>				
<p><u>Ability and Goal Setting:</u></p> <ol style="list-style-type: none"> <li>Demonstrate adaptability and flexibility when initiating or responding to change. (NCDG.PS3.A6)</li> <li>Analyze and evaluate strategies for</li> </ol>				

<p>addressing diverse and changing societal and global economic needs that influence personal decision-making for workplace success. (CED.9-12.C4)</p> <p>3. Identify short-term and long-term career goals (e.g., education, employment, and lifestyle goals). (NCDG.CM1.K3)</p> <p>4. Identify economic conditions that affect personal career plans. (NCDG.CM5.K2)</p>				
<p><b>HOW+L</b>  <u>Organization and Planning:</u></p> <p>1. Applies knowledge to set goals and make informed decisions. (MLR.GP.B.2)</p> <p>2. Recognizes the need for information, locates resources and opportunities, evaluates them, and seeks results. (MLR.GP.B.1; MLR.GP.C.5; MLR.GP.E2)</p> <p>3. Gains and applies knowledge across disciplines and learning contexts to real-life situation with and without technology. (MLR.GP.E.1)</p>				
<p><u>Task Initiation and Execution:</u></p> <p>1. Demonstrates initiative and independence. (MLR.GP.B.4)</p> <p>2. Demonstrates reliability and concern for quality. (MLR.GP.B.6)</p> <p>3. Uses information and technology to solve problems. (MLR.GP.C.6)</p>				
<p><u>Flexibility and Persistence:</u></p> <p>1. Applies knowledge in new contexts. (MLR.GP.B.3)</p> <p>2. Generates a variety of solutions, builds a case for a best response and</p>				

critically evaluates the response. (MLR.GP.C.4)				
<u>Interpersonal Skills:</u> 1. Demonstrates organized and purposeful communication in large or small groups. (MLR.GP.A.1) 2. Accepts responsibility for personal decision and actions. (MLR.GP.D.2)				
<b>Math Standards:</b> <u>Problem Solving -</u> 1. Check that results are reasonable. (CCSS.M.MP.1)				
<u>Modeling with Mathematics -</u> 1. Represent a situation using diagrams, equations, and/or expressions (de-contextualize). (CCSS.M.MP.2) 2. Interpret solutions in terms of the original situation (contextualize). (CCSS.M.MP.2) 3. Keep track of assumptions and revise them as necessary. (CCSS.M.MP.4)				
<u>Critical Reasoning -</u> 1. Assemble individual facts and assumptions to create a logical argument. (CCSS.M.MP.3)				
<u>Use of Tools -</u> 1. Choose a tool wisely. (CCSS.M.MP.5) 2. Use tools wisely. (CCSS.M.MP.5)				
<u>Precision -</u> 1. Attend to precision in communication. (CCSS.M.MP.6) 2. Attend to precision in calculation. (CCSS.M.MP.6)				



<p><b>Science Standards:</b>  <u>Inquiry</u> -</p> <ol style="list-style-type: none"> <li>1. Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design. (NGSS.SEP.I.1)</li> </ol>				
<p><u>Modeling</u> -</p> <ol style="list-style-type: none"> <li>1. Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system. (NGSS.SEP.M.1)</li> </ol>				
<p><u>Experimental Design</u> -</p> <ol style="list-style-type: none"> <li>1. Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution. (NGSS.SEP.D.1)</li> </ol>				
<p><u>Computation</u> -</p> <ol style="list-style-type: none"> <li>1. Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m<sup>3</sup>, acre-feet, etc.). (NGSS.SEP.C.1)</li> </ol>				
<p><u>Scientific Solutions</u> -</p> <ol style="list-style-type: none"> <li>1. Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. (NGSS.SEP.SS.1)</li> </ol>				