

SEACOAST SCHOOL OF TECHNOLOGY
Student Competency Profile
Welding Technologies – CIP 480508

Student: _____

YOG/Completed Program:

Jonathan Theberge, Instructor

Margaret E. Callahan, Principal

Technical Competencies & Performance Indicators

Understand and demonstrate proper safety practices and procedures to provide a safe work environment.	
	<p>1. Understand the safety practices within the work environment by:</p> <ul style="list-style-type: none"> • Interpreting and complying with Safety Data Sheets and explaining and interpreting information on labels and signs; • Identifying the purpose and demonstrating the proper use and fit of personal protective equipment (PPE); • Explaining the potential hazards associated with welding and cutting jobs, and explaining how to mitigate danger to oneself and coworkers; • Recognizing hazards associated with oxy-acetylene welding equipment (i.e., transport and storage of tanks, hoses, gauges) and taking the necessary measures to avoid unintentional injuries, including those caused by flashback and backfire; • Demonstrating correct rigging practices; • Obtaining CPR/ AED and First Aid training; and • Completing OSHA 10 certification.

Understand proper use of tools and equipment, and preventative maintenance practices.	
	<p>2. Demonstrate the proper use (including set-up, operation, safety assessments, & maintenance) of:</p> <ul style="list-style-type: none"> • Tools and power equipment; • Portable and fixed power tools/equipment; • Welding equipment; • Materials storage; and • Lock out tag out procedures
	3. Identify various metals and alloys used in welding and cutting jobs.
	4. Use measuring devices and gauges to determine dimensions for welding and cutting jobs.
	5. Prepare materials for welding.
	6. Describe the properties and classification of welding consumables (electrodes, filler metal and base metal classifications, etc.).

	7. Set-up welding equipment in accordance with the manufacturer's specifications.
	8. Select appropriate tools and materials for welding and cutting jobs.
	9. Demonstrate grinding, beveling, and other techniques to ensure metals fit together.

Understand the use and operation of equipment, their necessary performance, and be able to explain how they are critical to the integrity of the weld.	
	<p>10. Apply the knowledge and understanding of welding by:</p> <ul style="list-style-type: none"> • Describing the various welding processes commonly used in industry; • Describing the techniques available for the joining of materials by welding; • Understanding basic welding metallurgy; and • Describing various methods for testing welds and welders.
	11. Select the required welding process as nominated on the drawings.
	<p>12. Set and adjust welding parameters as required, including (but not limited to):</p> <ul style="list-style-type: none"> • Welding polarity • Welding amperage • Welding voltage • Wire feed speed • Travel speed • Torch/electrode angles • Mode of metal transfer • Selection of proper shielding gases
	13. Perform welding in all positions for all nominated processes.
	14. Weld steel plate utilizing the Manual Metal Arc Welding process.
	15. Weld steel plate utilizing the Gas Metal Arc Welding process.
	16. Weld steel plate utilizing the Flux Cored Arc Welding process.
	17. Weld steel plate utilizing the Gas Tungsten Arc Welding.

	18. Weld stainless steel utilizing the Gas Tungsten Arc.
	19. Weld aluminum sheet utilizing the Gas Tungsten Arc Welding process.
	20. Clean welds utilizing wire brushes, chisels, scrapers, etc.
	21. Demonstrate use of arc welder to complete simple tack and bead welds.
	22. Use grinder and other hand and power tools required to grind, bevel, fit metals together, and remove slag.
	23. Demonstrate knowledge of inspection principles and practices.
	24. Exposure to the proper procedures for up hand and down hand pipe welding, having observed demonstrations of both.

Demonstrate understanding of the necessary employability and career readiness skills in order to achieve success in today's workplace.	
	35. Apply the knowledge, skills and academic preparation to enter into employment or postsecondary education by: <ul style="list-style-type: none"> Identifying post-secondary welding programs apprenticeships, certification programs, and associate's degree programs. Demonstrating preparedness for AWS and other pre-employment qualifying tests. Applying knowledge of career- planning strategies and skills related to job search and job acquisition (including creation of professional documents and interview skills).

Understand the use of thermal cutting equipment and processes in order to obtain a quality cut.	
	25. Demonstrate the use of an oxy-acetylene torch to cut materials. <ul style="list-style-type: none"> Including lighting, adjusting, and extinguishing <i>an oxy-fuel flare</i>
	26. Demonstrate the use of a plasma-arc torch to cut materials.
	27. Demonstrate and set up straight line cuts and weld gouging.

Demonstrate an understanding of the integration of academic knowledge and technical skills used in the workplace.	
	28. Use oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. <ul style="list-style-type: none"> Read and demonstrate comprehension of written directions, including work orders and procedures. Demonstrate comprehension of verbal instructions and ask clarifying questions as needed.
	29. Read and layout drawing measurements using various scales (architect's, metric).
	30. Fabricate parts from a drawing or sketch.
	31. Interpret blueprints and welding symbols.
	32. Work within a team based environment to accomplish all aspects of welding and fabrication.
	33. Use current technology as required by the industry (CAD).
	34. Apply mathematical concepts to welding and cutting jobs, including estimation and understanding of fractions and decimals, as they relate to measurement.

Rating Scale

1. No Exposure
2. Novice – Learner requires significant supervision.
3. Proficient – Learner demonstrates skills regularly.
4. Mastery – Learner demonstrates skills numerous times without supervision

Career Ready Practices (CRP)

1. Demonstrate creativity and innovation.
2. Model integrity, ethical leadership and effective management.
3. Attend to personal health and financial well-being.
4. Consider the environmental, social and economic impacts of decisions.
5. Act as a responsible and contributing citizen and employee.
6. Communicate clearly, effectively, and with reason.
7. Apply appropriate academic and technical skills.
8. Employ valid and reliable research strategies.
9. Use technology to enhance productivity.
10. Work productively in teams while using cultural/global awareness.
11. Utilize critical thinking to make sense of problems and persevere in solving them.
12. Plan education and career path aligned to personal growth.