

APPENDIX A

PROGRAM OUTLINE

WELDING FOUNDATIONS

Program Outline

Welding Foundations

Admission Requirements:

Grade 10 or equivalent including English 10, Math 10, And Science 10. Grade 12 preferred.

Occupational Skills

- Describe welder apprenticeship and the scope of the trade in BC
- Describe safe working practices
- Perform basic trade related mathematical calculations
- Use and maintain measuring and layout tools
- Use and maintain hand tools
- Use and maintain power tools (electric and pneumatic)
- Describe shop materials
- Apply lifting, hoisting, and rigging procedures

Cutting and Gouging Processes

- Describe Oxy-Fuel Cutting (OFC) processes and their applications
- Describe Oxy-Fuel Cutting (OFC) equipment and its operation
- Perform freehand and guided cuts on low carbon steel (OFC)
- Use automatic and semi-automatic cutting machines (OFC)
- Describe CAC-A and PAC processes, equipment, and their applications
- Use CAC-A and PAC cutting and gouging processes and equipment.

Fusion and Braze Welding (TB) Using the Oxy-Fuel (OFW) Process

- Describe fusion welding, braze welding and brazing processes and their applications
- Describe fusion welding, braze welding, and brazing equipment and its operations
- Describe filler metals, fluxes and tips used for fusion welding, braze welding and brazing
- Describe joint design and weld positions for OFW
- Fusion weld on low carbon steel process
- Silver alloy braze on similar and dissimilar metals

Semi-Automatic and Automatic Welding

- Describe GMAW, GMAW-P, FCAW, MCAW, and SMAW processes and their applications
- Describe semi-automatic and automatic welding equipment and its operation
- Describe filler metal and shielding gases for semi-automatic and automatic processes
- Use the GMAW and GMAW-P process
- Use the FCAW process
- Use the MCAW process
- Use the SMAW process

Gas Tungsten Arc Welding (GTAW)

- Describe the GTAW process and its application
- Describe GTAW equipment and its operation
- Describe the application of GTAW for ferrous metals
- Use the GTAW process for ferrous metals
- Use the GTAW process for stainless steel

Basic Metallurgy

- Describe production processes for manufacturing metals
- Describe mechanical and physical properties of ferrous and non-ferrous metals
- Describe common ferrous, non-ferrous, reactive metals and their weldability

Welding Drawings, Layout and Fabrication

- Identify common welding symbols and bolted connections
- Read and interpret drawings
- Perform basic drafting
- Perform mathematical calculations
- Interpret and apply mechanical drawings and layout components
- Fabricate weldments
- Costing and estimating