COURSE WDA3401: TOOLS & EQUIPMENT

Level: First Period Apprenticeship

Prerequisite: WDA3900: Apprenticeship Safety

Description: Students use workshop hand and power tools and develop proper material handling techniques.

Parameters: Access to a materials work centre, complete with basic hand and power tools, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Hand Tools 120101f; Power Tools 120101g; Materials Handling 120101k

Outcomes: The student will:

1. **use hand tools**
   - 1.1 describe safety precautions for hand tools
   - 1.2 identify layout and measuring tools and their uses
   - 1.3 identify clamping tools and their uses
   - 1.4 identify cutting tools and their uses
   - 1.5 identify other hand tools used by welders
2. **use power tools**
   - 2.1 demonstrate the operation of bench and pedestal grinders, angle grinders and straight grinders
   - 2.2 demonstrate the operation of portable power drills, drill presses and twist drills
   - 2.3 describe the operation of metal forming and shaping tools
   - 2.4 describe the operation for metal cutting tools
   - 2.5 describe the use of power positioners
3. **apply materials handling procedures**
   - 3.1 identify procedures for handling and storing materials
   - 3.2 determine weight and centre of gravity of loads
   - 3.3 identify the load limits of wire rope and synthetic slings
   - 3.4 describe the use of plate clamps and cable clips
4. **demonstrate basic competencies**
   - 4.1 demonstrate fundamental skills to:
     - 4.1.1 communicate
     - 4.1.2 manage information
     - 4.1.3 use numbers
     - 4.1.4 think and solve problems
   - 4.2 demonstrate personal management skills to:
     - 4.2.1 demonstrate positive attitudes and behaviours
     - 4.2.2 be responsible
     - 4.2.3 be adaptable
     - 4.2.4 learn continuously
     - 4.2.5 work safely
   - 4.3 demonstrate teamwork skills to:
     - 4.3.1 work with others
     - 4.3.2 participate in projects and tasks
5. **create a transitional strategy to accommodate personal changes and build personal values**
   - 5.1 identify short-term and long-term goals
   - 5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3403: OXYFUEL & PLASMA ARC

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge, skills and attitudes to use oxyfuel heating and cutting equipment as well as plasma arc and gouging equipment and tools.

Parameters: Access to a materials work centre, complete with oxyfuel heating and cutting equipment as well as plasma arc equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Oxy-fuel Equipment 120101h; Oxy-fuel Cutting 120101i; Plasma Arc Cutting and Gouging 120101j

Outcomes: The student will:

1. assemble oxyfuel equipment
- 1.1 describe the characteristics and handling procedures for oxygen and fuel gases
- 1.2 describe the functions of oxyfuel equipment components
- 1.3 demonstrate the use, care and maintenance of oxyfuel equipment components
- 1.4 explain the procedure for placement, set-up and shutdown of oxyfuel equipment
- 1.5 identify causes and preventive measure for backfires, flashbacks and burn backs
- 1.6 describe pressure and flame adjustments

2. perform oxyfuel cutting
- 2.1 describe how to operate a hand-held oxyfuel cutting torch on mild steel plate and structural shapes
- 2.2 perform straight line, bevel and shape cutting on mild steel
- 2.3 pierce and cut holes in mild steel plate
- 2.4 cope 9.6 mm (⅜") mild steel to fit a 100 mm (4") channel member
- 2.5 perform cuts on structural shapes
- 2.6 operate a machine oxyfuel cutting torch on mild steel plate and pipe

3. cut and gouge using the plasma arc and carbon arc cutting processes
- 3.1 describe the plasma arc cutting process and equipment
- 3.2 observe plasma arc cutting
- 3.3 describe the carbon arc cutting process
- 3.4 gouge use the carbon arc cutting process

4. demonstrate basic competencies
- 4.1 demonstrate fundamental skills to:
  - 4.1.1 communicate
  - 4.1.2 manage information
  - 4.1.3 use numbers
  - 4.1.4 think and solve problems
- 4.2 demonstrate personal management skills to:
  - 4.2.1 demonstrate positive attitudes and behaviours
  - 4.2.2 be responsible
  - 4.2.3 be adaptable
  - 4.2.4 learn continuously
  - 4.2.5 work safely

© Alberta Education, Alberta, Canada

4.3 demonstrate teamwork skills to:
    4.3.1 work with others
    4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals
5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3406: ELECTRICITY & METALS

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge about electricity, metals and heat treatment as related to the welding trade.

Parameters: Access to a materials work centre, complete with welding equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Electricity 120102b; Metal Identification 120101c; Heat Treatment 120102d

Outcomes: The student will:

1. **describe electrical concepts**
   - 1.1 define electrical terms
   - 1.2 describe electron flow
   - 1.3 describe single-phase and three-phase power
   - 1.4 describe AC (alternating current) and DC (direct current) rectified power sources
   - 1.5 describe AC and DC generator power sources
   - 1.6 describe multi-purpose inverter power sources
   - 1.7 describe welding power source installation and maintenance
2. **identify types of metals and their characteristics**
   - 2.1 identify metals by visual appearance, colour, relative weight, typical shape and texture
   - 2.2 describe chip, spark, file hardness and flame tests
   - 2.3 interpret information supplied on mill test reports
   - 2.4 describe the mechanical properties of metals
   - 2.5 describe the physical properties of metals
3. **identify the effects of heat treatment on carbon steels**
   - 3.1 define heat-affected zones in metals
   - 3.2 explain the difference between heat and temperature
   - 3.3 explain the three forms of heat transfer
   - 3.4 describe the effects of expansion and contraction
   - 3.5 describe the purpose and effects of pre-heating and post-heating
   - 3.6 describe the practices of heat treatment
   - 3.7 explain the principle of temperature indicating devices
4. **demonstrate basic competencies**
   - 4.1 demonstrate fundamental skills to:
     - 4.1.1 communicate
     - 4.1.2 manage information
     - 4.1.3 use numbers
     - 4.1.4 think and solve problems

© Alberta Education, Alberta, Canada

4.2 demonstrate personal management skills to:
- 4.2.1 demonstrate positive attitudes and behaviours
- 4.2.2 be responsible
- 4.2.3 be adaptable
- 4.2.4 learn continuously
- 4.2.5 work safely

4.3 demonstrate teamwork skills to:
- 4.3.1 work with others
- 4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals

5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3407: SYMBOLS & DRAWINGS

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to identify blueprint symbols and interpret drawings related to the welding trade.

Parameters: Access to a materials work centre, complete with drawings and blueprints, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Joint and Weld Types 120102e; Welding Symbols 120102f; Drawing Interpretation 120102a

Outcomes: The student will:

1. identify joints and weld types
- 1.1 identify the five basic joints
- 1.2 describe the types of welds and their dimensions
- 1.3 identify joint and weld type variations
- 1.4 outline the considerations in the design of a joint for welding

2. interpret welding symbols
- 2.1 explain the purpose of welding symbols
- 2.2 define weld symbol, welding symbol and supplementary symbols
- 2.3 interpret weld symbols and welding symbols
- 2.4 identify the dimensions of weld symbols
- 2.5 identify non-destructive testing symbol

3. read and interpret drawings
- 3.1 identify the alphabet of lines
- 3.2 explain the purpose of drawings
- 3.3 identify elements and information found on drawings
- 3.4 interpret symbols, views and sections used on drawings
- 3.5 identify metric and imperial dimensioning

4. demonstrate basic competencies
- 4.1 demonstrate fundamental skills to:
  - 4.1.1 communicate
  - 4.1.2 manage information
  - 4.1.3 use numbers
  - 4.1.4 think and solve problems
- 4.2 demonstrate personal management skills to:
  - 4.2.1 demonstrate positive attitudes and behaviours
  - 4.2.2 be responsible
  - 4.2.3 be adaptable
  - 4.2.4 learn continuously
  - 4.2.5 work safely
- 4.3 demonstrate teamwork skills to:
  - 4.3.1 work with others
  - 4.3.2 participate in projects and tasks

© Alberta Education, Alberta, Canada

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals

5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3408: WELD FAULTS

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to understand the concept of distortion, identify weld faults and understand the use of hardfacing as related to the welding trade.

Parameters: Access to a materials work centre, complete with welding equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Distortion 120102g; Weld Faults 120102h; Hardfacing 120102i

Outcomes: The student will:

1. **identify distortion and methods of control**
   - 1.1 identify how heat and temperature relate to distortion
   - 1.2 identify the three types of distortion, their causes and control of each type
   - 1.3 describe the mechanical, procedural and design methods of controlling distortion
2. **identify weld faults**
   - 2.1 define the classifications of weld faults
   - 2.2 define the notching effect
   - 2.3 identify weld faults, their causes and methods of prevention
3. **observe hardfacing of steel**
   - 3.1 describe the hardfacing process and applications
   - 3.2 identify types of wear
   - 3.3 identify filler metals for hardfacing
   - 3.4 identify the problems associated with hardfacing and how to avoid them
   - 3.5 describe the procedures for applying hardfacing materials with filler wires
4. **demonstrate basic competencies**
   - 4.1 demonstrate fundamental skills to:
     - 4.1.1 communicate
     - 4.1.2 manage information
     - 4.1.3 use numbers
     - 4.1.4 think and solve problems
   - 4.2 demonstrate personal management skills to:
     - 4.2.1 demonstrate positive attitudes and behaviours
     - 4.2.2 be responsible
     - 4.2.3 be adaptable
     - 4.2.4 learn continuously
     - 4.2.5 work safely
   - 4.3 demonstrate teamwork skills to:
     - 4.3.1 work with others
     - 4.3.2 participate in projects and tasks
5. **create a transitional strategy to accommodate personal changes and build personal values**
   - 5.1 identify short-term and long-term goals
   - 5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3411: WIRE-FEED WELDING

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students use wire-fed welding machines.

Parameters: Access to a materials work centre, complete with wire-feed welding equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Wire Feed Welding Equipment Power Sources 120103a; Wire Feed Welding Filler Metals and Feeders 120103b;

Outcomes: The student will:

1. **select wire-feed welding equipment**
   - 1.1 describe the principals of operation of wire-feed welding equipment
   - 1.2 identify the components of a wire-feed welding equipment set-up
   - 1.3 describe wire-process welding equipment power sources and wire feeders
   - 1.4 identify advantages and disadvantages of wire-feed processes
2. **select wire-feed welding consumables**
   - 2.1 identify wire-feed welding equipment filler metals
   - 2.2 describe the modes of metal transfer
   - 2.3 describe wire-feed drive systems and gun and cable accessories
   - 2.4 describe wire-feed operating variables
3. **demonstrate basic competencies**
   - 3.1 demonstrate fundamental skills to:
     - 3.1.1 communicate
     - 3.1.2 manage information
     - 3.1.3 use numbers
     - 3.1.4 think and solve problems
   - 3.2 demonstrate personal management skills to:
     - 3.2.1 demonstrate positive attitudes and behaviours
     - 3.2.2 be responsible
     - 3.2.3 be adaptable
     - 3.2.4 learn continuously
     - 3.2.5 work safely
   - 3.3 demonstrate teamwork skills to:
     - 3.3.1 work with others
     - 3.3.2 participate in projects and tasks
4. **create a transitional strategy to accommodate personal changes and build personal values**
   - 4.1 identify short-term and long-term goals
   - 4.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3413: GASES & MAINTENANCE

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to select shielding gases and to maintain and troubleshoot wire-fed welding machines.

Parameters: Access to a materials work centre, complete with wire-feed welding equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Wire Feed Welding Shielding Gases 120103c; Wire Welding Maintenance and Troubleshooting 120103d

Outcomes: The student will:

1. **select shielding gases for the wire-feed process**
   - 1.1 identify shielding gases for wire-feed processes
   - 1.2 identify shielding gas supply systems
2. **set-up, maintain and troubleshoot wire welding equipment**
   - 2.1 demonstrate the set-up and maintenance required for wire-drive systems and gun assemblies
   - 2.2 perform corrective measures for malfunctioning wire-process equipment
3. **demonstrate basic competencies**
   - 3.1 demonstrate fundamental skills to:
     - 3.1.1 communicate
     - 3.1.2 manage information
     - 3.1.3 use numbers
     - 3.1.4 think and solve problems
   - 3.2 demonstrate personal management skills to:
     - 3.2.1 demonstrate positive attitudes and behaviours
     - 3.2.2 be responsible
     - 3.2.3 be adaptable
     - 3.2.4 learn continuously
     - 3.2.5 work safely
   - 3.3 demonstrate teamwork skills to:
     - 3.3.1 work with others
     - 3.3.2 participate in projects and tasks
4. **create a transitional strategy to accommodate personal changes and build personal values**
   - 4.1 identify short-term and long-term goals
   - 4.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3415: GMAW ON MILD STEEL

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to use gas metal arc welding (GMAW) equipment.

Parameters: Access to a materials work centre, complete with GMAW equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: GMAW on Mild Steel 120103e

Outcomes: The student will:

1. **perform fillet and groove welds on mild steel**
   - 1.1 weld stringer/weave beads in the flat and horizontal positions
   - 1.2 weld in the 1F, 2F and 3F positions
   - 1.3 weld in the 1G, 2G, 3G and 4G positions
   - 1.4 weld a 1GR
   - 1.5 use CWB test procedures
   - 1.6 weld the 1GF, 2G, 3GF and 4GF joint configurations with a 6.35 mm (¼") backing plate
   - 1.7 weld on structural shapes
2. **demonstrate basic competencies**
   - 2.1 demonstrate fundamental skills to:
     - 2.1.1 communicate
     - 2.1.2 manage information
     - 2.1.3 use numbers
     - 2.1.4 think and solve problems
   - 2.2 demonstrate personal management skills to:
     - 2.2.1 demonstrate positive attitudes and behaviours
     - 2.2.2 be responsible
     - 2.2.3 be adaptable
     - 2.2.4 learn continuously
     - 2.2.5 work safely
   - 2.3 demonstrate teamwork skills to:
     - 2.3.1 work with others
     - 2.3.2 participate in projects and tasks
3. **create a transitional strategy to accommodate personal changes and build personal values**
   - 3.1 identify short-term and long-term goals
   - 3.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3420: FCAW & MCAW ON MILD STEEL

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to use flux core arc welding (FCAW) and metal core arc welding (MCAW) equipment.

Parameters: Access to a materials work centre, complete with FCAW and MCAW equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: FCAW and MCAW on Mild Steel 120103f

Outcomes: The student will:

1. **perform specific welding operations in multiple positions**
   - 1.1 weld stringer/weave beads in the flat and horizontal positions on mild steel plate
   - 1.2 weld in the 1F, 2F and 3F positions using the FCAW process
   - 1.3 weld using the MCAW process
   - 1.4 weld in the 1GF, 2G, 3GF and 4GF joint configurations using the FCAW process with a 6.35 mm (¼") backing plate
   - 1.5 use CWB testing procedures
   - 1.6 weld on structural shapes
2. **demonstrate basic competencies**
   - 2.1 demonstrate fundamental skills to:
     - 2.1.1 communicate
     - 2.1.2 manage information
     - 2.1.3 use numbers
     - 2.1.4 think and solve problems
   - 2.2 demonstrate personal management skills to:
     - 2.2.1 demonstrate positive attitudes and behaviours
     - 2.2.2 be responsible
     - 2.2.3 be adaptable
     - 2.2.4 learn continuously
     - 2.2.5 work safely
   - 2.3 demonstrate teamwork skills to:
     - 2.3.1 work with others
     - 2.3.2 participate in projects and tasks
3. **create a transitional strategy to accommodate personal changes and build personal values**
   - 3.1 identify short-term and long-term goals
   - 3.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3423: MILD STEEL WELDS

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to use GMAW, FCAW and MCAW equipment in various positions and configurations.

Parameters: Access to a materials work centre, complete with GMAW, FCAW and MCAW equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: GMAW, FCAW and MCAW Groove Welds on Mild Steel 120103g

Outcomes: The student will:

1. **perform GMAW, FCAW and MCAW welds on mild steel**
   - 1.1 weld butt joints in the 1G, 2G and 3G positions on mild steel using GMAW for the root bead and using FCAW or MCAW for fill and cap
   - 1.2 weld with MCAW on various joint configurations
2. **demonstrate basic competencies**
   - 2.1 demonstrate fundamental skills to:
     - 2.1.1 communicate
     - 2.1.2 manage information
     - 2.1.3 use numbers
     - 2.1.4 think and solve problems
   - 2.2 demonstrate personal management skills to:
     - 2.2.1 demonstrate positive attitudes and behaviours
     - 2.2.2 be responsible
     - 2.2.3 be adaptable
     - 2.2.4 learn continuously
     - 2.2.5 work safely
   - 2.3 demonstrate teamwork skills to:
     - 2.3.1 work with others
     - 2.3.2 participate in projects and tasks
3. **create a transitional strategy to accommodate personal changes and build personal values**
   - 3.1 identify short-term and long-term goals
   - 3.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3427: MILD STEEL PIPE WELDS

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills to use GMAW, FCAW and MCAW equipment in various positions and configurations on mild steel pipe.

Parameters: Access to a materials work centre, complete with GMAW, FCAW and MCAW equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: GMAW, FCAW and MCAW on Mild Steel Pipe 120103j

Outcomes: The student will:

1. **perform GMAW, FCAW and MCAW welds on mild steel pipe**
   - 1.1 weld in the 2G position on pipe using GMAW
   - 1.2 weld in the 1G-rotated positions on pipe using GMAW for root pass and FCAW or MCAW for fill and cap
   - 1.3 weld in the 2G position on pipe using GMAW for root pass and using FCAW for fill and cap
   - 1.4 weld with GMAW in the 5G position on pipe using a root downhill pass, an uphill fill pass and an uphill cap pass
2. **demonstrate basic competencies**
   - 2.1 demonstrate fundamental skills to:
     - 2.1.1 communicate
     - 2.1.2 manage information
     - 2.1.3 use numbers
     - 2.1.4 think and solve problems
   - 2.2 demonstrate personal management skills to:
     - 2.2.1 demonstrate positive attitudes and behaviours
     - 2.2.2 be responsible
     - 2.2.3 be adaptable
     - 2.2.4 learn continuously
     - 2.2.5 work safely
   - 2.3 demonstrate teamwork skills to:
     - 2.3.1 work with others
     - 2.3.2 participate in projects and tasks
3. **create a transitional strategy to accommodate personal changes and build personal values**
   - 3.1 identify short-term and long-term goals
   - 3.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3429: ALUMINUM & SAW

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3401: Tools & Equipment

Description: Students develop knowledge and skills in aluminum welding and in submerged arc welding (SAW).

Parameters: Access to a materials work centre, complete with GMAW and SAW equipment, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Aluminum and Aluminum Welding 120103h; GMAW on Aluminum 120103i; Submerged Arc Welding (SAW) 120103k

Outcomes: The student will:

1. **explain aluminum properties and principles**
   - 1.1 explain the physical and chemical properties of aluminum and steel
   - 1.2 explain how physical and chemical properties affect the welding of aluminum
   - 1.3 explain the aluminum association numerical designation for casting alloys and wrought aluminum
   - 1.4 explain the effects of welding on heat treatable and non-heat treatable alloys
   - 1.5 weld aluminum and its alloys
   - 1.6 list the filler metals used for welding aluminum with GMAW
2. **perform welds on aluminum**
   - 2.1 weld stringer/weave beads in the flat and horizontal positions on 3.2 mm (⅛") or greater aluminum material
   - 2.2 weld in the 1F, 2F and 3F positions on 3.2 mm (⅛") or greater aluminum material
3. **describe the components and operation of the SAW (submerged arc welding) process**
   - 3.1 describe the principles of operation of SAW
   - 3.2 identify the components of a SAW set-up
   - 3.3 describe SAW power sources, wire feeders, flux feed systems, welding head assemblies and control systems
   - 3.4 describe SAW operating variables
   - 3.5 identify SAW filler metals and fluxes
   - 3.6 describe SAW equipment maintenance and troubleshooting
   - 3.7 identify advantages and disadvantages of SAW
4. **demonstrate basic competencies**
   - 4.1 demonstrate fundamental skills to:
     - 4.1.1 communicate
     - 4.1.2 manage information
     - 4.1.3 use numbers
     - 4.1.4 think and solve problems

© Alberta Education, Alberta, Canada

4.2 demonstrate personal management skills to:
- 4.2.1 demonstrate positive attitudes and behaviours
- 4.2.2 be responsible
- 4.2.3 be adaptable
- 4.2.4 learn continuously
- 4.2.5 work safely

4.3 demonstrate teamwork skills to:
- 4.3.1 work with others
- 4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals

5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3432: WELDING MATH 1

Level: First Period Apprenticeship

Prerequisite: WDA3900: Apprenticeship Safety

Description: Students solve math problems involving fractions, decimals, percentage and ratios related to the welding trade.

Parameters: Access to a materials work centre, complete with measuring tools and math problems and support materials, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Fractions 120104a; Decimals 120104b; Percentage and Ratios 120104c

Outcomes: The student will:

1. **solve problems involving fractions**
   - 1.1 identify terms and concepts used with fractions
   - 1.2 use practical fractions with a tape measure
   - 1.3 change fractions to a common denominator
   - 1.4 solve problems using whole numbers and fractions in practical applications
2. **solve problems involving decimals**
   - 2.1 solve decimal fraction calculations
   - 2.2 round decimal fractions to specified place values
   - 2.3 convert decimal inches and decimal feet to feet and inch fractions with a practical denominator
   - 2.4 convert fractions to decimals
   - 2.5 add, subtract, multiply and divide decimal fractions
3. **solve problems involving percentage and ratios**
   - 3.1 convert between fractions, decimals and percents
   - 3.2 calculate ratio problems: two quantities in the form of a ratio and two ratios in the form of a proportion
   - 3.3 solve percent problems
4. **demonstrate basic competencies**
   - 4.1 demonstrate fundamental skills to:
     - 4.1.1 communicate
     - 4.1.2 manage information
     - 4.1.3 use numbers
     - 4.1.4 think and solve problems
   - 4.2 demonstrate personal management skills to:
     - 4.2.1 demonstrate positive attitudes and behaviours
     - 4.2.2 be responsible
     - 4.2.3 be adaptable
     - 4.2.4 learn continuously
     - 4.2.5 work safely
   - 4.3 demonstrate teamwork skills to:
     - 4.3.1 work with others
     - 4.3.2 participate in projects and tasks
5. **create a transitional strategy to accommodate personal changes and build personal values**
   - 5.1 identify short-term and long-term goals
   - 5.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3437: WELDING MATH 2

Level: First Period Apprenticeship

Prerequisites: WDA3900: Apprenticeship Safety
WDA3432: Welding Math 1

Description: Students solve math problems involving geometric formulas and metric and imperial measures related to the welding trade.

Parameters: Access to a materials work centre, complete with measuring tools and math problems and support materials, and to instruction from an individual with journeyperson certification as a welder.

ILM Resources: Geometric Formulas 120104d; Metric and Imperial Measure 120104e

Outcomes: The student will:

1. solve problems involving geometric formulas
- 1.1 identify terms and concepts used in working with formulas
- 1.2 identify formulas and solve problems for perimeter, area and volume
- 1.3 calculate the weight of a solid
- 1.4 calculate the capacity of a container in gallons and litres

2. solve problems involving metric and imperial measure
- 2.1 identify metric units of measurement
- 2.2 convert between units of measurement
- 2.3 convert imperial units, including converting:
  - 2.3.1 feet and inches
  - 2.3.2 square inches and cubic feet
  - 2.3.3 cubic measures to gallons

3. demonstrate basic competencies
- 3.1 demonstrate fundamental skills to:
  - 3.1.1 communicate
  - 3.1.2 manage information
  - 3.1.3 use numbers
  - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
  - 3.2.1 demonstrate positive attitudes and behaviours
  - 3.2.2 be responsible
  - 3.2.3 be adaptable
  - 3.2.4 learn continuously
  - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
  - 3.3.1 work with others
  - 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values
- 4.1 identify short-term and long-term goals
- 4.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada

COURSE WDA3445: WDA PRACTICUM A

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

© Alberta Education, Alberta, Canada

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

© Alberta Education, Alberta, Canada

COURSE WDA3450: WDA PRACTICUM B

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

© Alberta Education, Alberta, Canada

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

© Alberta Education, Alberta, Canada

COURSE WDA3455: WDA PRACTICUM C

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

© Alberta Education, Alberta, Canada

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

© Alberta Education, Alberta, Canada

COURSE WDA3460: WDA PRACTICUM D

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

© Alberta Education, Alberta, Canada

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

© Alberta Education, Alberta, Canada

COURSE WDA3900: APPRENTICESHIP SAFETY

Level: First Period Apprenticeship

Prerequisite: None

Description: Students develop knowledge, skills and attitudes in the practice of workshop health and safety, communication and career planning.

Parameters: Access to a materials work centre and to instruction from an individual with specialized training in occupational health and safety (and understanding of the welding industry) and/or a welder.

ILM Resources: Safety Legislation, Regulations and Industry Policy in the Trades 650101a; Climbing, Lifting, Rigging and Hoisting 650101b; Hazardous Materials and Fire Protection 650101c; Communication 090101d; Alberta's Industry Network 650401a; Welding Safety 120101e; Welder Apprenticeship Program Orientation 120104f

Note: This course may promote discussions around sensitive topics (e.g., injury and death) in the context of student safety with respect to workplace hazards.

Outcomes: The student will:

1. **describe legislation, regulations and practices intended to ensure a safe workplace in the welder apprenticeship trade**
   - 1.1 demonstrate the ability to apply the *Occupational Health and Safety Act (OHS), Regulation* and *Code*, as well as the changes from Bill C-45
   - 1.2 explain the core requirements applicable to all industries, including:
     - 1.2.1 engineering controls
     - 1.2.2 administrative controls
     - 1.2.3 personal protective equipment (PPE)
   - 1.3 demonstrate an understanding of the 26 parts of the OHS Code requirements applicable to all industries
   - 1.4 demonstrate an understanding of the 12 parts of the OHS Code requirements applicable to specific industries and activities
   - 1.5 demonstrate an understanding of the 11 OHS Code Schedules that the Explanation Guide does not address
   - 1.6 explain the role of the employer and employee in regard to occupational health and safety legislation, considering:
     - 1.6.1 employer responsibilities (OHS Regulation)
     - 1.6.2 employee responsibilities (OHS Regulation)
     - 1.6.3 Workplace Hazardous Materials Information System (WHMIS)
     - 1.6.4 fire regulations
     - 1.6.5 Workers' Compensation Board (WCB)
     - 1.6.6 related advisory bodies and agencies; e.g., Alberta Construction Safety Association (ACSA), Construction Owners Association of Alberta (COAA), Occupational Health and Safety Council (OHSC), Work Safe Alberta, Safety Codes Council

© Alberta Education, Alberta, Canada

1.7 explain industry practices for hazard assessment and control procedures in four main hazard categories, including:
    1.7.1 biological
    1.7.2 chemical
    1.7.3 ergonomic
    1.7.4 physical hazards
1.8 identify and describe hazard assessment tools that both employees and employers must use in assessing and controlling work-site hazards, including:
    1.8.1 work-site hazard identification and assessment
    1.8.2 health and safety plan
    1.8.3 joint work-site health and safety committee
    1.8.4 emergency response plans
    1.8.5 first-aid and incident reports
1.9 identify and describe engineering controls that provide the highest level of worker protection, including:
    1.9.1 elimination
    1.9.2 substitution
    1.9.3 redesign
    1.9.4 isolation
    1.9.5 automation
1.10 identify and describe employer administrative controls that limit hazards to the lowest level possible, including:
    1.10.1 safe work practices
    1.10.2 job procedures, policies, rules
    1.10.3 work/rest schedules to reduce exposure
    1.10.4 limiting hours of work
    1.10.5 scheduling hazardous work during non-peak times
    1.10.6 using optional methods
1.11 describe the responsibilities of employees and employers to apply emergency procedures, including:
    1.11.1 emergency response plans
    1.11.2 first aid
1.12 describe positive tradesperson attitudes with respect to legal responsibilities for all workers, including:
    1.12.1 housekeeping
    1.12.2 lighting
    1.12.3 personal protective equipment (PPE)
    1.12.4 emergency procedures

© Alberta Education, Alberta, Canada

1.13 describe the roles and responsibilities of employers and employees with respect to the selection and use of personal protective equipment (PPE), including:
- 1.13.1 eye protection; e.g., class 1 (spectacles), class 2 (goggles), class 3 (welding helmets), class 4 (welding hand shields), class 5 (hoods), class 6 (face shields), class 7 (respirator face pieces)
- 1.13.2 flame resistant clothing
- 1.13.3 foot protection; e.g., category 1, 2 or 3 footwear requirements
- 1.13.4 head protection; e.g., class G (general), class E (electrical), class C (conducting)
- 1.13.5 hearing protection; e.g., earplugs or earmuffs
- 1.13.6 life jackets and personal flotation devices (PFDs)
- 1.13.7 limb and body protection
- 1.13.8 respiratory protective equipment; e.g., particulate filters; chemical cartridges or canisters; airline respirators, hoods, helmets and suits; self-contained breathing apparatus (SCBA)
- 1.13.9 a combination of any of the above

2. describe the use of personal protective equipment (PPE) and safe practices for climbing, lifting, rigging and hoisting in the welder apprenticeship trade

2.1 select, use and maintain specialized PPE and materials for climbing, lifting and loading, including:
- 2.1.1 full body harness
- 2.1.2 body belt
- 2.1.3 ladders
- 2.1.4 scaffold systems
- 2.1.5 lifting and moving equipment
- 2.1.6 PPE for lifting
- 2.1.7 materials handling equipment; e.g., forklift, four-wheel dolly, chain hoist, overhead crane

2.2 describe manual lifting procedures, including correct body mechanics, considering:
- 2.2.1 back safety
- 2.2.2 general procedure for lifting
- 2.2.3 employer and employee preventive actions to avoid back injuries

2.3 describe rigging hardware and the safe work load associated with:
- 2.3.1 wire rope slings
- 2.3.2 synthetic fibre web slings
- 2.3.3 chain slings
- 2.3.4 rigging hardware inspection
- 2.3.4 sling angle on load rigging

2.4 select the correct equipment for rigging typical loads, including:
- 2.4.1 eye bolts
- 2.4.2 shackles
- 2.4.3 rings and links
- 2.4.4 hooks
- 2.4.5 swivels
- 2.4.6 spreader bars and equalization beams
- 2.4.7 blocks
- 2.4.8 sheaves
- 2.4.9 turnbuckles

2.5 describe hoisting and load-moving procedures

© Alberta Education, Alberta, Canada

2.6 explain the most commonly used sling configurations to connect a load to a hook, including:
- 2.6.1 vertical hitch
- 2.6.2 bridle hitch
- 2.6.3 single and double basket hitch
- 2.6.4 wrap hitch
- 2.6.5 single and double choker hitch

2.7 demonstrate the standard movement signals a signaler is required to know to signal a crane operator, including:
- 2.7.1 hoist and lower load
- 2.7.2 raise and lower boom
- 2.7.3 swing boom
- 2.7.4 stop
- 2.7.5 emergency stop
- 2.7.6 dog everything

3. describe the safety practices for hazardous materials and fire protection in the welder apprenticeship trade

3.1 describe the roles, responsibilities, features and practices related to the Workplace Hazardous Materials Information System (WHMIS) program, including:
- 3.1.1 suppliers', employers' and employees' responsibilities
- 3.1.2 WHMIS classifications
- 3.1.3 health effects from exposure to chemicals

3.2 describe the three key elements of WHMIS, including:
- 3.2.1 worker education
- 3.2.2 supplier and workplace product labelling
- 3.2.3 material safety data sheets

3.3 describe handling, storage and transportation procedures when dealing with hazardous materials, including:
- 3.3.1 handling, storing and transporting flammable liquids
- 3.3.2 handling, storing and transporting compressed gas
- 3.3.3 storing incompatible materials

3.4 describe safe venting procedures when working with hazardous materials, including:
- 3.4.1 mechanical general ventilation
- 3.4.2 local ventilation
- 3.4.3 portable smoke extractor
- 3.4.4 working in a confined space

3.5 describe fire hazards, classes, procedures and equipment related to fire protection, including:
- 3.5.1 elements of a fire
- 3.5.2 classes of fires
- 3.5.3 fire extinguisher labels
- 3.5.4 extinguishing small fires
- 3.5.5 the PASS method

© Alberta Education, Alberta, Canada

4. demonstrate communication skills and workshop safety as they pertain to occupational health and safety standards

- 4.1 use various types of communication to provide trade-related information, employing standard terms for components and operations, including:
  - 4.1.1 personal appearance
  - 4.1.2 business appearance
  - 4.1.3 suppliers and sales representatives
  - 4.1.4 customers
  - 4.1.5 tradespeople
- 4.2 identify key areas of responsibility that an employee has in regards to shop and trade safety, including:
  - 4.2.1 housekeeping
  - 4.2.2 waste containers
  - 4.2.3 power tools and rotating machinery
  - 4.2.4 compressed air
  - 4.2.5 exhaust gases
  - 4.2.6 control of carbon monoxide (CO)
  - 4.2.7 hazardous materials, dangerous goods and controlled products
- 4.3 explain the correct use of fire extinguishers and explain fire prevention techniques

5. demonstrate an understanding of the welder apprenticeship trade and of apprenticeship opportunities that exist by creating a personal career portfolio

- 5.1 demonstrate an understanding of the welder trade and related job opportunities
- 5.2 describe what it means to be an apprentice and describe requirements for the employee and employer
- 5.3 describe Alberta's apprenticeship and industry training system
- 5.4 describe the roles and responsibilities of the Alberta Apprenticeship and Industry Training Board, government and post-secondary institutions
- 5.5 describe the roles and responsibilities of the provincial apprenticeship committee (PAC), local apprenticeship committee (LAC) and occupational committees
- 5.6 refine and present a personal career portfolio, showing evidence of strengths and competencies, including:
  - 5.6.1 application completion
  - 5.6.2 cover letter
  - 5.6.3 résumé with references
- 5.7 demonstrate knowledge of workplace requirements, rights and responsibilities and relate this knowledge to personal career/employment expectations
- 5.8 outline the educational requirements to move into the welder apprenticeship trade and:
  - 5.8.1 conduct successful employment searches
  - 5.8.2 communicate in the language in which business is conducted
  - 5.8.3 prepare a personal employment search portfolio
  - 5.8.4 use technologies, tools and information systems appropriately for job preparation

6. apply safe work practices according to *Occupational Health and Safety Act (OHS)* legislation

- 6.1 identify hazards for welding and cutting operations
- 6.2 identify the use of personal protective equipment (PPE) for welding and cutting operations
- 6.3 explain the hazards involved with welding fumes and gases
- 6.4 identify welding fume ventilation methods
- 6.5 explain the effects of electricity and describe precautions used to prevent injury
- 6.6 describe the procedures for welding or cutting in confined spaces or potentially dangerous enclosures
- 6.7 interpret sections of the *Occupational Health and Safety Act*

© Alberta Education, Alberta, Canada

7. demonstrate basic competencies

- 7.1 demonstrate fundamental skills to:
  - 7.1.1 communicate
  - 7.1.2 manage information
  - 7.1.3 use numbers
  - 7.1.4 think and solve problems
- 7.2 demonstrate personal management skills to:
  - 7.2.1 demonstrate positive attitudes and behaviours
  - 7.2.2 be responsible
  - 7.2.3 be adaptable
  - 7.2.4 learn continuously
  - 7.2.5 work safely
- 7.3 demonstrate teamwork skills to:
  - 7.3.1 work with others
  - 7.3.2 participate in projects and tasks

8. create a transitional strategy to accommodate personal changes and build personal values

- 8.1 identify short-term and long-term goals
- 8.2 identify steps to achieve goals

© Alberta Education, Alberta, Canada