Workplace Health and Safety

A tradesperson is often exposed to more hazards than any other person in the work force and therefore should be familiar with and apply the Occupational Health and Safety Act, Regulations and Code when dealing with personal safety and the special safety rules that apply to all daily tasks.

Workplace Health and Safety (Alberta Employment, Immigration and Industry) conducts periodic inspections of workplaces to ensure that safety regulations for industry are being observed.

Additional information is available at www.worksafety.org

Technical Training

Apprenticeship technical training is delivered by the technical institutes and many colleges in the public post-secondary system throughout Alberta. The colleges and institutes are committed to delivering the technical training component of Alberta apprenticeship programs in a safe, efficient and effective manner. All training providers place great emphasis on safe technical practices that complement safe workplace practices and help to develop a skilled, safe workforce.

The following institutions deliver Welder apprenticeship technical training:

- Medicine Hat College
- Keyano College
- Northern Alberta Institute of Technology
- Southern Alberta Institute of Technology
- Grande Prairie Regional College
- Olds College
- Lakeland College
- Red Deer College
- Lethbridge College
- Northern Lakes College (Slave Lake)
- Portage College (Lac La Biche)

Procedures for Recommending Revisions to the Course Outline

Advanced Education and Technology has prepared this course outline in partnership with the Welder Provincial Apprenticeship Committee.

This course outline was approved on December 11, 2006 by the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. The valuable input provided by representatives of industry and the institutions that provide the technical training is acknowledged.

Any concerned individual or group in the province of Alberta may make recommendations for change by writing to:

Welder Provincial Apprenticeship Committee
c/o Industry Programs and Standards
Apprenticeship and Industry Training
Advanced Education and Technology
10th floor, Commerce Place
10155 102 Street NW
Edmonton AB T5J 4L5

It is requested that recommendations for change refer to specific areas and state references used. Recommendations for change will be placed on the agenda for regular meetings of the Welder Provincial Apprenticeship Committee.
Apprenticeship Route toward Certification

APPLICATION

CONTRACT AND RECORD BOOK

ENTRANCE EXAMINATION

PASS

FAIL

Reattempt

EDUCATIONAL IMPROVEMENT COURSE

PROOF OF GRADE 9

FIRST PERIOD
1500 HOURS - PLUS WORK EXPERIENCE, ATTENDANCE AND PASSING OF TECHNICAL TRAINING

SECOND PERIOD
1500 HOURS - PLUS WORK EXPERIENCE, ATTENDANCE AND PASSING OF TECHNICAL TRAINING

THIRD PERIOD
1500 HOURS - PLUS WORK EXPERIENCE, ATTENDANCE AND PASSING OF TECHNICAL TRAINING

JOURNEYMAN CERTIFICATE

INTERPROVINCIAL EXAMINATION FOR "RED SEAL"
Welder Training Profile
FIRST PERIOD
(8 Weeks 30 Hours per Week – Total of 240 Hours)

SECTION ONE
SAFETY, TOOLS, WELD FAULTS AND OAW

A
Welder Apprenticeship Program Orientation
120101a 2 Hours
B
Safety Guidelines
120101b 4 Hours
C
Welding Safety
120101c 4 Hours
D
Hand Tools
120101d 2 Hours
E
Power Tools
120101e 5 Hours
F
Weld Faults
120101f 5 Hours
G
Oxy-Fuel Equipment
120101g 4 Hours
H
Oxy-Fuel Brazing
120101h 8 Hours
I
Oxy-Fuel Cutting
120101i 12 Hours
J
Materials Handling
120101j

SECTION TWO
SMAW ONE

A
SMAW Equipment
120102a 6 Hours
B
Mild Steel Electrodes
120102b 3 Hours
C
Basic Joint and Weld Types
120102c 4 Hours
D
Shop/Lab Practices: SMAW Welds on Mild Steel
120102d 65 Hours
E
Arc Cutting and Gouging
120102e 3 Hours

SECTION THREE
GMAW, FCAW AND SAW

A
Gas Metal Arc Welding (GMAW) - Equipment
120103a 4 Hours
B
GMAW Filler Metals, Shielding Gases and Safety
120103b 4 Hours
C
GMAW, Equipment and Troubleshooting
120103c 7 Hours
D
Flux Cored Arc Welding (FCAW)
120103d 4 Hours
E
Submerged Arc Welding (SAW)
120103e 5 Hours
F
Shop / Lab Practices: GMAW Welds on Mild Steel
120103f 30 Hours
G
Shop / Lab Practices: FCAW Welds on Mild Steel
120103g 14 Hours
H
Shop / Lab Practices: Combined GMAW and FCAW Welds on Mild Steel
120103h 5 Hours

SECTION FOUR
TRADE MATHEMATICS

A
Fractions
120104a 4 Hours
B
Decimals
120104b 4 Hours
C
Percentage and Ratios
120104c 5 Hours
D
Geometric Formulas
120104d 12 Hours
E
Metric and Imperial Measure
120104e 5 Hours
SECOND PERIOD
(8 Weeks 30 Hours per Week – Total of 240 Hours)

SECTION ONE
SMAW TWO
110 HOURS

A
SMAW Groove Welds on Grey Cast Iron
120201a 2 Hours

B
Production and Properties of Metals
120201b 6 Hours

C
Carbon & Alloy Steels and Alloy Steel Filler Metals
120201c 8 Hours

D
Metal Identification
120201d 2 Hours

E
Distortion
120201e 3 Hours

F
Hardfacing
120201f 3 Hours

G
SMAW Welds on Mild Steel
120201g 86 Hours

SECTION TWO
GTAW ONE GMAW and FCAW TWO
64 HOURS

A
Introduction to GTAW Process
120202a 2 Hours

B
GTAW Electrodes, Filler Metals, and Shielding Gases
120202b 4 Hours

C
GTAW Equipment Maintenance and Troubleshooting
120202c 3 Hours

D
GTAW Welds on Mild Steel
120202d 18 Hours

E
Aluminum and Aluminum Welding
120202e 8 Hours

F
GTAW Welds on Aluminum
120202f 6 Hours

G
GTAW Welds on Stainless Steel
120202g 6 Hours

H
GMAW Welds on Aluminum
120203a 2 Hours

I
GMAW, SMAW and FCAW Welds on Mild Steel Pipe
120203b 15 Hours

SECTION THREE
PATTERN DEVELOPMENT AND DRAWING INTERPRETATION
66 HOURS

A
Introduction to Pattern Development
120204a 6 Hours

B
Geometric Construction
120204b 14 Hours

C
Isometric and Oblique Drawings
120204c 6 Hours

D
Basic Fabrication Layout Practice
120204d 10 Hours

E
Plate Layout
120204e 8 Hours

F
Pipe Layout
120204f 6 Hours

G
Welding Symbols
120204g 10 Hours

H
Estimating
120204h 6 Hours
THIRD PERIOD
(8 Weeks 30 Hours per Week – Total of 240 Hours)

SECTION ONE
SMAW THREE
118 HOURS

A
Stainless Steels
120301a 6 Hours

B
Nickel Alloys and Clad Steels
120301b 2 Hours

C
SMAW Welds and Oxy-Fuel Cutting on Mild Steel
120301c 80 Hours

D
SMAW Welds on Mild Steel Plate and Pipe
120301d 30 Hours

SECTION TWO
GTAW TWO
28 HOURS

A
GTAW Welds on Mild Steel Plate and Pipe
120302a 28 Hours

SECTION THREE
DRAWING INTERPRETATION
58 HOURS

A
Introduction to Drawing Interpretation
120303a 12 Hours

B
Structural Drawings
120303b 14 Hours

C
Piping Drawings
120303c 16 Hours

D
Pressure Vessel Drawings
120303d 16 Hours

SECTION FOUR
TRADE SCIENCE
36 HOURS

A
Non-Destructive Testing
120304a 4 Hours

B
Destructive Testing
120304b 8 Hours

C
Metallurgy
120304c 7 Hours

D
Heat Treatment
120304d 6 Hours

E
Codes and Standards
120304e 10 Hours

F
Apprenticeship and Industry Training – Industry Network
120304f 1 Hour

NOTE: The hours stated are for guidance and should be adhered to as closely as possible. However, adjustments must be made for rate of apprentice learning, statutory holidays, registration and examinations for the training establishment and Apprenticeship and Industry Training.