

Welder - Upgrading A Guide to Course Content

Welders cut and join metals using various methods and equipment.

Training Requirements: All candidates applying for upgrading training must be eligible to challenge the Interprovincial journeyperson examination.

The information contained in this pamphlet serves as a guide for employers and apprentices. The pamphlet briefly summarizes the training provided in the upgrading program. This program is designed to prepare individuals to challenge the Welder Interprovincial journeyperson examinations.

This course is available in two approved formats: A theory-only or a theory/practical format. This is to accommodate those candidates that have already successfully completed either the theory or the practical examination. Applicants will have the option to take a complete theory and practical course (7 weeks) or a theory-only course (4 weeks).

NOTE: All registration and fees associated with enrollment in the theory only 4 week Saskatchewan Polytechnic program (Weld 1847) are at the cost of the candidate and are not covered by the SATCC. Further information can be found on the Saskatchewan Polytechnic website www.saskpolytech.ca.

The content of the 7-week theory/practical program includes approximately 1 1/2 hours per day of related theory. Instructors administer practical and theory examinations during the first week to assess the needs, knowledge and skill level of each student. Time frames of each portion of training may be adjusted to suit the needs of the candidate, as a result of these pre-tests.

Consideration will be given to those candidates that have already been successful at either the theory or practical component of the certification examinations. The training may be adjusted accordingly to accommodate the areas of instruction required.

The content of the technical training components is subject to change without notice.

Welder Upgrader - 7 weeks

Theory Areas of Instruction:

General Welding Safety

- interpretation of safety legislation and standards
- material handling and rigging practices
- personal protective equipment and practices
- safe shop work practices - housekeeping, equipment and tool use

Quality Assurance

- identification of applicable codes and standards
- mill test results, heat numbers and material traceability
- weld procedure data sheets, electrode data sheets and procedure qualification records
- interpretation of welder qualification information

Special Welding and Cutting Processes

- OFW and OFC safety, equipment and accessories
- CAC-A and PAC safety, equipment and accessories
- specialized welding processes - SAW, SW, PAW, TW and RW

Shielded Metal Arc Welding (SMAW)

- design and function of weld power sources and accessories
- SMAW safety considerations
- weld faults
- joint preparation for plate

Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW) and Metal Core Arc Welding (MCAW)

- design and functions of components and accessories of a GMAW and a FCAW power source
- GMAW, FCAW and MCAW safety considerations
- applications of each welding process
- identification of weld parameters

Gas Tungsten Arc Welding (GTAW)

- design and function of all major GTAW components and accessories
- GTAW safety considerations

Print Reading and Fabrication

- interpretation of advanced welding symbols
- interpretation of basic piping drawings
- determining material and weld requirements from shop drawings

Metallurgy and Material Designation

- physical, chemical and mechanical properties of metals
- identification of steels and metals by classification system and measurement
- shop test used to identify metals
- tempering, normalizing and annealing
- pre-heat, interpass and post-heat considerations

Practical Areas of Instruction:

Special Welding and Cutting Processes

- perform cutting procedures on plate - 30° bevel, contour and hole
- use air carbon arc cutting to remove a backing plate
- use plasma arc cutting and gouging process

Shielded Metal Arc Welding (SMAW)

- weld 3/8 in. mild steel, vertical V-groove butt joints - E6010 root with E7018 fill and cap
- weld 3/8 in. mild steel, horizontal V-groove butt joint - E6010
- perform 4GF test using E7018

Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW) and Metal Core Arc Welding (MCAW)

- weld 3/8 in. mild steel, flat V-groove butt joint using GMAW
- Weld 3/8 in. mild steel, vertical V-groove butt joint using FCAW (fill and cap only)
- weld 3/8 in. mild steel, horizontal T-joint, 3-pass using MCAW

Gas Tungsten Arc Welding (GTAW)

- weld 3/8 in. mild steel, flat V-groove butt joint - open root

Print Reading and Fabrication

- using metal forming equipment to cut and form material

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