

I. COURSE DESCRIPTION:

A trades curriculum that has been designed to provide students with a combination of theoretical knowledge and hands on skill in relation to the safe use and operation of the SMAW welding process.

1. *Identify and Select Personal Protective Equipment for Arc Welding Operations***Potential Elements of the Performance:**

- identify proper eye, hand and face protection
- identify proper footwear and clothing
- identify and select filter lenses
- describe the effects of exposure to ultra violet and / or infra red radiation
- locate and identify shop ventilation controls
- locate and identify emergency exits
- locate and identify manifold shut-off valves for the shop gas system
- identify hazards associated with the SMAW process
- understand emergency shop evacuation procedures

2. *Demonstrate and describe how to set up and operate a typical SMAW Workstation.*

- **Potential Elements of the Performance:**
- identify, select and adjust welding helmets and lenses
- identify SMAW electrodes according to type, size, current type, polarity and welding position according to AWS and CSA designation
- identify and describe the various types of welding machine according to construction, duty cycle and current type
- perform a routine inspection of assigned workstation to determine the condition of welding machine, cables, electrode holders and related equipment
- understand the hazards of open circuit voltage (OCV) and arc voltage
- identify / set welding machine controls to their designated value(s)
- describe techniques for arc ignition, electrode manipulation and travel speeds
- produce trial weld beads to identify possible defects and verify current settings

3. *Demonstrate the ability to produce sound T-Class welds as well as identify / troubleshoot and make corrective adjustments for weld defects.*

Potential Elements of the Performance:

- prepare material, ensure proper fit-up and use correct tacking procedures for the following welds.
- groove welds on various material thicknesses in the 1G (flat) position.
- groove welds on various material thicknesses in the 2G (horizontal) position.
- groove welds on various material thicknesses in the 3G (vertical) position.
- groove welds on various material thicknesses in the 4G (overhead) position.
- Complete coupon bend procedures.

4. *Demonstrate the ability to complete pipe welds.*

Potential Elements of the Performance:

- perform proper material preparation procedures.
- demonstrate fit-up and tacking procedures.
- in the 2G position tack and feather.
- complete remaining welds, ¼ in 2G position then tack in 5G and complete welds.
- perform 6G on various pipe diameters.

III. TOPICS:

1. Personal Protective Equipment and Safety
2. SMAW equipment safety and set-up
3. SMAW T-Class welds (4 positions)
4. Pipe Welds

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Impact Resistant Safety Glasses (CSA Approved)
- High Cut (6 inch) Safety Work Boot (CSA Approved)
- Weld Gloves (CSA Approved)
- Modules: N/A

V. EVALUATION PROCESS/GRADING SYSTEM:**Part 1 NOTES:**

1. Re-writes are NOT allowed for any written assignment, quiz or test.
2. Repeats are NOT allowed for any shop test
3. Course attendance is mandatory. One percent (1 %) per hour will be Deducted from the final course grade for unexcused* absence.

[Any absence without a written, valid reason will be deemed unexcused.]

Valid reasons would include:

- Doctor's note
- Apprenticeship Ministry note
- Family Death or Serious Illness supported by a written note.

Part 2 Final Course Grades:

The final course grade will be determined by means of the following list of weighted factors:

Factor	Value
Shop Assignments	65 %
Practical Tests	35 %
Attendance	-1% per Unexcused Hour
Late	-1% per Late
Shop Clean-up	-1% per Incident

The following semester grades will be assigned to students:

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical	

U	placement or non-graded subject area. Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI. SPECIAL NOTES:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.