SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	Shielded Metal Arc Welding (SMAW) 3		
CODE NO. :	MTF210	**SEMESTER:**	THREE
PROGRAM:	Metal Fabricator Technician		
AUTHOR:	Steve Witty		
INSTRUCTOR:	Dave Holley		
DATE:	September 2014	**PREVIOUS OUTLINE DATED:**	September 2013

APPROVED:

"Corey Meunier"

CHAIR **DATE**

TOTAL CREDITS:	2
PREREQUISITE(S):	MTF137
HOURS/WEEK:	2

For additional information, please contact Corey Meunier, Chair
School of Technology & Skilled Trades
(705) 759-2554, Ext. 2610

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. Students must be able to complete all S-class tests to proceed on to T-class and pipe.

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 S- Class or 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. Describe pipe weld operations.

Potential Elements of the Performance:

- proper material preparation procedures
- 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
- 6G on various pipe diameters

III. TOPICS:

1. Personal Protective Equipment and Safety
2. SMAW equipment safety and set-up
3. SMAW S and 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)

V. EVALUATION PROCESS/GRADING SYSTEM:

NOTES:

1. Late hand in penalties will be 10% per day. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.
2. If a student misses a test/lab he/she must have a valid reason (i.e. medical or family emergency – documentation shall be required). In addition, the instructor MUST be notified PRIOR to the test or lab sitting. If this procedure is not followed the student will receive a mark of zero on the test/lab with no make-up option.
3. Re-writes are NOT allowed for any written assignment, quiz or test.
4. Repeats are NOT allowed for any shop test.
5. Course attendance is mandatory. One percent (1 %) per hour will be deducted from the final course grade for unexcused* absence.

Valid reasons would include:

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

FINAL COURSE GRADES:

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

Factor	***Value***
Practical Tests	100%
Attendance	-1% per Unexcused Hour
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%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	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.