SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

SAULT
COLLEGE

COURSE OUTLINE

COURSE TITLE:	OXY Cutting, Fusion and Braze Welding		
CODE NO. :	MTF136	**SEMESTER:**	ONE
PROGRAM:	Metal Fabricator Technician / Welding Techniques		
AUTHOR:	Steve Witty		
DATE:	Sept 2010	**PREVIOUS OUTLINE DATED:**	Dec 2009

APPROVED:

"Corey Meunier"
CHAIR **DATE**

TOTAL CREDITS:	TWO
PREREQUISITE(S):	N/A
HOURS/WEEK:	TWO

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 both OFG welding, cutting and heating equipment.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:.

Upon successful completion of this course, the student will demonstrate the ability to:

1. Identify equipment and procedures required to assure personal safety while engaged in shop activities.

Potential Elements of the Performance:

- identify proper work boots, gloves and eye protection
- identify recommended fabrics and materials for personal protective clothing
- understand the general organization and layout of the welding shop facility
- locate and identify shop lighting and ventilation controls
- locate and identify emergency exits
- identify and select proper shades of welding / cutting lens
- identify, select and adjust helmets for proper fit and vision
- understand procedures for evacuation of shop areas in the case of emergencies

2. Identify oxyacetylene cutting and welding equipment / accessories including their construction, operation, assembly and disassembly

Potential Elements of the Performance:

- cylinders
  - identification
  - general construction
- pressure regulators
- manual valves
- manifold systems
- gages and hoses
- torch body
- tips for cutting, heating, welding
- cutting attachments
- flashback arrestors
- check equipment for safe operating condition

3. Identify, describe and demonstrate the theory of oxyacetylene cutting.

Potential Elements of the Performance:

- set up equipment for oxyacetylene cutting
- select tip size and set cutting pressures for a given thickness of metal
- check equipment for safe operation
- pressurize, ignite, adjust and safely operate a cutting torch
- perform typical flame cutting operations to include
    - square cut c/w re-start
    - bevel cut c/w re-start
    - piercing and making holes
- list and sketch five (5) joint designs for welded joints
- prepare plate edges for butt welding
- prepare pipe ends for butt welding

4. Demonstrate the ability to recognize weld faults and control distortion.

Potential Elements of the Performance:

- name the factors that determine weld quality
- list the properties of a good weld
- identify and sketch three types of oxyacetylene welding flames
- name the factors that determine tip selection
- state the purpose of using a filler rod
- list the factors that determine filler rod selection
- state the cause and methods of control for welding faults
- state the cause and methods of control for distortion

5. Demonstrate the ability to deposit sound weld beads, tack welds and butt joints with filler rod in the flat position.

Potential Elements of the Performance:

- set up equipment for oxyacetylene welding
- select tip size and set welding pressures for a given thickness of metal
- pressurize, ignite, adjust and safely operate a welding torch
- check equipment for safe operation
- deposit weld beads on mild steel plate with filler rod
- prepare butt joints to specification for welding
- tack weld joints to maintain alignment
- butt weld mild steel plate in the flat, horizontal and vertical position with filler rod
- butt weld a pipe joint in the horizontal fixed position

III. TOPICS:

1. Personal and Shop Safety
2. Oxy-Acetylene Welding and Cutting Equipment
3. Flame Cutting Practice and Procedure
4. Fusion Welding Practice and Procedures
5. Weld Defects and Distortion

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- CSA Approved (Impact Resistant) Safety Glasses
- CSA Approved (6 inch High Cut) Safety Work Boots
- CAS Approved (Gauntlet Type) Welding Gloves
- Appropriate Work Wear (see Welding Shop Guidelines)
- Modules: Course Pack MTF 136

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.

[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 and 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.

VII. COURSE OUTLINE ADDENDUM:

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