

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**SAULT  
COLLEGE**

**COURSE OUTLINE**

**COURSE TITLE:** Thermal Cutting

**CODE NO. :** MTF139

**SEMESTER:** N/A

**PROGRAM:** Metal Fabricator Technician  
& Welding Techniques

**AUTHOR:** Steve Witty

**DATE:** January  
2013

**PREVIOUS OUTLINE  
DATED:**

January  
2012

**APPROVED:**

*"Corey Meunier"*

**CHAIR**

**DATE**

**TOTAL CREDITS:** 1

**PREREQUISITE(S):** N/A

**HOURS/WEEK:** 1

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*For additional information, please contact Corey Meunier, Chair*  
*Technology & Skilled Trades*  
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**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 Plasma Arc Cutting and Carbon Arc Gouging equipment.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:.**

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

**1. *Define safety related concepts.*****Potential Elements of the Performance:**

- Personal protection
- Electrical safety
- grounding
- bonding
- radiation
- heat, noise, fumes
- high open circuit voltage
- high pressure cylinders
- compressed air pressure

**2. *Explain the features of plasma arc cutting equipment*****Potential Elements of the Performance:**

- power supplies
- torches
- secure cylinders
- gauges, hoses, fittings
- tips
- pressures
- speed of travel
- types of cuts
- material types
- material thickness
- piercing
- quality control

**3. Cut manually using plasma arc equipment.**Potential Elements of the Performance:

- set-up parameters for
  - square cuts
  - bevel cuts
  - piercing
  - straight cutting
  - shape cutting
  - shut down

**4. Correct common cutting faults.**Potential Elements of the Performance:

- Cut edge quality
- Kerf lines
- Cutting direction based on square side of cut
- Dross adherence (slag)

**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)

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

**[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:

<b><i>Factor</i></b>	<b><i>Value</i></b>
Shop Assignments and Tests	
• Plasma set-up/operation	50%
• Carbon Arc set-up/operation	<u>50%</u>
	100%
Late	-1 % per
Attendance	-1 % per Unexcused Hour
Shop Clean-up	-1 % per Incident

The following semester grades will be assigned to students:

<b>Grade</b>	<b>Definition</b>	<i>Grade Point Equivalent</i>
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.