

I. COURSE DESCRIPTION: This curriculum has been designed to provide new and / or inexperienced clients with a combination of theoretical knowledge and basic practical (hands on) skill in the safe use and operation of both OFG and SMAW 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 and describe oxyacetylene cutting and heating equipment and accessories including their construction, operation, assembly and disassembly.***

Potential Elements of the Performance:

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

3. ***Demonstrate and describe the process of Oxyacetylene Flame Cutting and Heating.***

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
 - piercing and making holes
- distort / shape gauge metal by means of heating and cooling
- create a mild steel repair patch

4. ***Demonstrate and describe the process of:***

- a) Oxyacetylene Fusion Welding.***
b) Oxyacetylene Braze Welding.

Potential Elements of the Performance:

- set up equipment for oxyacetylene fusion 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 sheet metal with filler rod
- set up equipment for oxyacetylene braze 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 brass beads on mild steel sheet metal

5. ***Demonstrate and describe the process of making a welded patch repair by means of the Oxyacetylene Process***

Potential Elements of the Performance:

- set up equipment for oxyacetylene braze or fusion 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
- tack weld patch repairs to maintain alignment
- braze weld mild steel patch in the flat and horizontal and position

6. ***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 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

7. ***Demonstrate and describe the process of making a welded patch repair by means of the SMAW Process***

Potential Elements of the Performance:

- set up equipment for shielded metal arc welding
- check equipment for safe operation
- select electrode size, current and polarity for the given thickness of metal
- tack weld patch repairs to maintain alignment
- weld mild steel patch in the flat and horizontal and position

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. C.S.A. Approved (6") Safety Work Boots
2. C.S.A. Approved Safety Glasses
3. C.S.A Approved Welding Gloves (Gauntlet Type)
4. Appropriate Work Wear – (as per the Welding Department Guidelines)
5. Modules: Course Pack MSE616 (Bundle "A")

III. TOPICS:

1. Personal and Shop Safety
2. Cylinder Construction and Safe Operation / Use
3. Flame Cutting and Heating Equipment and Techniques
4. Fusion and Braze Welding Equipment and Techniques
5. Shielded Metal Arc Welding Equipment and Techniques

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 apprentices with more than 4 hours of 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 and Tests	65 %
CWB S-Class Test(s)	35 %
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%	3.00
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:

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

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.