

I. COURSE DESCRIPTION: Demonstrate the ability to utilize shop machinery and equipment to safely prepare fabrication and detail materials.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Demonstrate safe operation of fabrication machinery.

- Ironworkers
- Shears
- Benders
- Drilling machines
- Fitting tools

2. Operate thermal cutting processes to generate shapes.

- Freehand shape cutting
- Oxy/Fuel torches

3. Assemble components and sub assemblies.

- Sequence of assembly
- Alignment
- Jigs and fixtures
- Tack welds
- Fasteners
- Bracing

4. Develop jigs and fixtures.

- Critical dimensions
- Datum locations
- Material selection
- Fabrication
- Clamping
- Forming and shaping
- Part removal
- Accessibility

5. Demonstrate complex assembly techniques.

- Prepared joint data
- Proper seam alignment on vessels
- Tack location and process
- Temporary restraint
- Pipe diameter alignment
- Oblique pipe intersections
- Structural intersections / HSS intersections
- Tightening sequence / bolting
- Alignment of multi-segment cones
- Standard tolerance of structural shapes
- Pre-welding requirements
- Accessibility of weld joints
- Ongoing third party checks
- Accommodation of part variation while maintaining overall dimensions
- Alignment and dimensions using heat or mechanical means
- Trial assembly of completed sub-components

III. TOPICS:

1. Safe demonstration of shop machinery.
2. Operation of thermal cutting equipment.
3. Component assembly.
4. Jig and fixture development and use.
5. Complex assembly techniques.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. **Metal Trades Handbook**
2. **CSA Approved steel toe boots**
3. **CSA Approved safety glasses**
4. **Leather welding gloves**
5. **Coveralls / Protective welding garments**

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 (as determined by instructor).

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.

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

Valid reasons would include:

- Doctor's 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
Project 1:	25%
Project 2:	25%
Project 3:	25%
Project 4:	25%

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|---------------|------------------------|
| - Attendance: | -1% per Unexcused Hour |
| - Late | -1% per Unexcused Hour |

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
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 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:

Electronic Devices, cell phones are not permitted in classroom.

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.