

(705) 759-2554, Ext. 2610

I. COURSE DESCRIPTION:

Perform drawings, common views and basic drafting and sketching operations as applied to the welder/fabricator programs and explain the features of joint types, positions and welding symbols as applied to welder/fabricator programs.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Applied Blueprint Reading***Potential Elements of the Performance:**

- Describe the content and organization of drawings
- Define the purpose and function of the common types of lines found on drawings
- Describe the purpose and function of the common views and presentations found on drawings
- Describe the commonly available structural steel shapes
- Perform assigned drafting and sketching operations
- Perform assigned shop projects — layout and fitting techniques

Learning Content:**Describe the content and organization of drawings.**

- purpose of a drawing
- components of the drawing
 - lines
 - views
 - symbols
 - title block
 - list of materials
 - notes and specifications
- types of working drawings
 - engineering drawings
 - erection drawings
 - erection diagrams
 - architectural drawings
 - assembly prints
 - sub-assembly prints
 - overview of CAD drawings

- blueprints
- shop details or working drawings
- sketches
- common scales
- imperial and metric measurements
- third angle projection
- first angle projection

Define the purpose and function of the common types of line found on drawings.

- object lines
- hidden lines
- centre lines
- dimension and extension lines
- leader lines
- break lines
- cutting plane lines
- hatch lines
- phantom lines

Describe the purpose and function of the common views and presentations found on drawings.

- orthographic projection
 - front, back, top and side views - revolved views
 - selecting the appropriate "front" or most descriptive view
- isometric drawing
 - three-dimensional sketching
 - oblique and perspective views
- pictorial drawing
 - "true" perspective
 - vanishing point
 - not to be scaled
- section views
 - full and partial sections
 - revolved section
 - half section

Describe the commonly available structural steel shapes.

- shapes available
- sheet
 - common sizes and gauge measurement system
- plate
 - commonly available sizes
 - thickness, width and length
- pipe
 - schedules available
 - nominal size and common lengths
 - hollow structural sections (HSS)
 - round
- flat
 - bar
 - square
 - rectangular
 - bar
 - round
 - square
 - hexagonal
- angle
 - common types and sizes
- channel
 - common types and sizes
 - dimensioning standards
- beams
 - common types and sizes

Perform assigned drafting and sketching operations.

- use appropriate drafting tools to complete drawing
 - compass
 - protractor
 - rule
 - divider
- complete orthographic drawing of a designated object showing various views
 - front
 - back
 - side
 - top or bottom
 - lines
 - dimensioning

- complete three dimensional drawing or sketch of a designated object
 - isometric
 - oblique
 - pictorial

Perform assigned shop projects – layout and fitting techniques.

- layout tools
 - imperial and metric rulers
 - squares
 - levels
 - compass
 - protractor
- marking lines - soap stone line
 - chalk line
 - paint stick
 - centre punch line
 - scribing
- layout math skills
 - fractions
 - addition
 - subtraction
 - angle measurement
- 5 basic joints
 - butt
 - tee
 - lap
 - corners - edge
- structural shapes intersections
 - angles
 - channels - beams - HSS
 - miter
 - cope
- layout project(s)
 - material preparation
 - plate
 - structural shapes
 - layout and mark cut lines
 - shapes - corners
 - 90 degree miter
 - cope corner

- manual flame cutting
 - dimensioning material
 - edge preparation
- semi-automatic flame cutting
 - dimensioning material
 - edge preparation
- saws
 - hacksaw
 - cut-off abrasive wheel saw
 - band saws
- hand grinders
- edge and surface preparation
- fitting and assembly of parts
 - corners - miter
 - lapped - coped
 - dimensional accuracy
 - squareness
 - diagonal measurement
 - 3-4-5 triangle
 - tack weld assembly with prescribed process

2. ***Joint Design and Welding Symbols***

Potential Elements of the Performance:

- Define fundamental joint types and positions
- Explain the purpose and use of different joints
- Explain the components of welding symbols
- Explain the design and application of welding symbols

Define fundamental joint types and positions

- five basic joints
 - butt
 - tee
 - lap
 - corner
 - edge
 - geometry of joint preparation
 - terminology of joints
 - positions, plate and pipe

- flat, (1F), (1G)
- horizontal, (2F), (2G)
- vertical, (3F), (3G)
- progression up
- progression down
- overhead, (4F), (4G)
- (5F), (5G), (6G)

Explain the purpose and use of different joints

- application of each basic joint
- introduction to joint limitations
- thickness
- economy
- process
- position
- accessibility
- distortion
- complete and partial joint penetration
- beveling / chamfering methods

Explain the components of welding symbols

- reference line
- arrow side and other side significance
- multiple reference lines
- arrows
- broken arrows
- tail
- specifications and notes

TOPICS:

1. Applied Blueprint Reading
2. Joint Design and Welding Symbols

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Impact Resistant Safety Glasses (CSA Approved)
- High Cut (6 inch) Safety Work Boot (CSA Approved)
- Weld Gloves (CSA Approved)
- Modules: Course Pack MTF 101 + Drafting kit

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 per unexcused hour.

[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
Theory Quiz & Test	60 %
Assignments	40 %
Attendance	-1% per Unexcused Hour
Shop Clean-up	-1% per Incident

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
F (Fail)	59% 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.