



**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. Basic Lines and Views**

1. Identify and describe the usage for the common line types which are:
  - Object Line
  - Hidden Line
  - Center Line
  - Extension Line
  - Dimension Line
  - Leader Line
  - Cutting Plane Line
  - Section Line
  - Chain Line
  - Short Break Line
  - Long Break Line
  - Phantom Line
2. Identify two different methods in which an object is represented on a print.
3. Identify the proper orientation of the views used in an orthographic projection.
4. List the different views used in an orthographic projection.

**2. Sketching**

1. Discuss the purpose of sketching and its importance.
2. Sketch a straight line.
3. Sketch Arcs, Circles and Ellipses.
  - Create an arc using two different methods
  - Create a circle using the right angle method
  - Create a circle using the square method
  - Create a circle using the triangle method
4. Create an orthographic sketch.
5. Create an oblique sketch.
6. Create an isometric sketch.
7. Create an isometric circle.
  - Use the angle method to create an isometric circle
  - Use the triangle method to create an isometric circle
  - Use the rectangle method to create an isometric circle

**3. Notes and Specifications**

1. Identify the standard paper sizes used in mechanical drawing.
2. Identify the typical information contained within a drawing's title block.
3. Describe the difference between general notes and local notes.
4. Identify the proper location for a specification.

**4. Dimensions**

1. Define the following terms:
  - Common Fraction
  - Inclined Angle
  - Land
  - Feather Edge
  - Dual Dimensioning
  - Base Size
  - Actual Size
  - Nominal Size
2. Identify the following types of dimensions:
  - Angular Dimensions
  - Linear Dimensions
  - Radius and Arc Dimensions
  - Drilled Hole Dimensions
  - Countersunk and Counterbored Holes Dimensions
  - Spotface Dimensions
3. Discuss the importance of tolerances.
4. Identify the following elements of a tolerance:
  - Minimum
  - Maximum
5. Understand the importance of a drawings scale.
6. Understand the following dimensioning methods:
  - Conventional Dimensioning
  - Baseline Dimensioning

**5. Bill of Materials**

1. Discuss the importance of a bill of materials.
2. Identify the size and quantity of a particular part by looking at a bill of materials.
3. Specify a particular type of steel used in a bill of material.
4. Identify a project summary worksheet and describe its purpose.
5. Define the following terms:
  - Sheet Metal
  - Metal Plate
  - Flat Bar
  - Long
  - Flat

**6. Structural Shapes**

1. Define the following terms:
  - Hot-Rolled
  - Cold-Rolled
  - Weight
  - S-beams
  - I-Beams
2. Identify many of the common structural shapers used.
  - Square Bar
  - Rectangular Bar
  - Sheet
  - Strip or Band
  - Plate or Flat Bar
  - Round Bar
  - Half Oval Bar
  - Hexagon Bar
  - Octagon Bar
  - Angle
    - o Equal Legs
    - o Unequal Legs
  - Tee
  - Channel
  - Zee
  - Standard S-Beam
  - Wide Flange Beam
  - Square and Rectangular Tubing
  - Pipe
    - o Standard
    - o Extra Strong
    - o Double Strong
  - Round Tubing
    - o Standard
    - o Thin wall
3. Specify pipe size by using schedule numbers.
4. Identify the common schedule number used for pipe sizes.

**7. Other Views**

1. Define the following terms:
  - Break Symbol
  - Revolved Section
  - Auxiliary Views
  - Enlarged Detail
  - Developed View
  - Revolved View
  - Untrue Projection

2. Identify an auxiliary view and describe when they are typically used.
3. Determine when it is necessary to use both a “Right” and “Left” side to describe the detail associated with a part.
4. Determine when it is necessary to locate a side view in an alternate position from the norm.
5. Determine the proper location for an enlarged view.
6. Discuss the purpose of a development (developed view).
7. Determine when it is necessary to use a revolved view.

## **8. Sections**

1. Define the following terms:
  - Cutting Plane
  - Section
2. Identify the following sections:
  - Full Section
  - Half Section
  - Revolved Section
  - Assembly Section
  - Phantom Section
  - Aligned Section
  - Break-Out Section
  - Offset Section
  - Removed Section
3. Determine when the following sections are to be used
  - Full Section
  - Half Section
  - Revolved Section
  - Assembly Section
  - Phantom Section
  - Aligned Section
  - Break-Out Section
  - Offset Section
  - Removed Section

## **9. Detail, Assembly, and Subassembly Prints**

1. Define the following terms:
  - Detail Drawing
  - Assembly Print
  - Subassembly Print
2. List the components that makeup a detail drawing.
3. List the components that makeup an assembly print.

**10. *Welding Symbols and Abbreviations***

1. Define the following terms:
  - Reference Line
  - Arrow
  - Tail
  - Arrow Side
  - Other Side
2. List the components that makeup a standard welding symbol.
3. Identify the proper location of a weld symbol.
4. Identify additional welding symbols elements.
5. Identify field weld and weld-all-around symbols.
6. Identify supplementary contour and finish symbols.
7. Identify multiple weld symbol information.
8. Identify bevel information.
9. Understand multiple reference lines.
10. Understand welding abbreviations.

**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:****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 for unexcused\* absence.

Valid reasons would include:

- Doctor's note
- Apprenticeship Ministry note
- Family Death or Serious Illness supported by a written note.

**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 Practical Tests | 100%                   |
| Attendance                           | -1% per Unexcused Hour |
| Shop Clean-up                        | -1% per Incident       |

The following semester grades will be assigned to students:

| <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.