



COURSE OUTLINE: MTF101 - BLUEPRINT READING

Prepared: Dave Holley

Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	MTF101: APPLIED BLUEPRINT READING
Program Number: Name	4051: METAL FABRICATION 4053: WELDING TECHNIQUES
Department:	IRONWKR APPR./WELDING RELATED
Semesters/Terms:	20F
Course Description:	Perform drawings, common views, and basic drafting and sketching operations as applied to the welder/fabricator programs.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	MTF130, MTF140
Vocational Learning Outcomes (VLO's) addressed in this course:	<p>4051 - METAL FABRICATION VLO 1 Interpret blueprints and produce basic drawings and bills of materials.</p> <p>4053 - WELDING TECHNIQUES VLO 2 Interpret engineering drawings and blueprints and produce basic graphics as required by industry. VLO 3 Recognize and understand use of welding symbols. VLO 4 Use layout and fabrication processes typical to the industry to determine correct form with accuracy. VLO 5 Select appropriate tools and devices to perform mathematical calculations and technical measurements for successful completion of a project.</p>
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.



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1. Late hand in penalties will be -10% per day.
2. If a student misses a test, 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 sitting. If this procedure is not followed the student will receive a mark of zero on the test with no make-up option.
3. Re-writes are NOT allowed for any written assignment, quiz or test.
4. Course attendance is mandatory. Any student that is not present for the first 3 classes in each course, will be deemed to have not completed the required safety orientation for the course and will not be permitted to continue. One percent (1 %) per hour will be deducted from the final course grade for unexcused* absence. Any unexcused attendance beyond 15% of the total allocated course hours will result in the student receiving a failing grade for the course.

Valid reasons would include:

Doctors note

Family Death or Serious Illness supported by a written note.

Unexcused absence* will be determined in a case by case basis by the instructor of each course.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
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.	Upon successful completion of this course, the student will demonstrate the ability to: <ol style="list-style-type: none"> 1. Basic Lines and Views <ol style="list-style-type: none"> 1. Identify and describe the usage for the common line types which are: <ul style="list-style-type: none"> 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

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1. Discuss the purpose of sketching and its importance.
2. Sketch a straight line.
3. Sketch Arcs and Circles.

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 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
Lead
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

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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

Equal Legs

Unequal Legs

Tee

Channel

Zee

Standard S-Beam

Wide Flange Beam

Square and Rectangular Tubing

Pipe

Standard

Extra Strong

Double Strong

Round Tubing

Standard

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

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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.

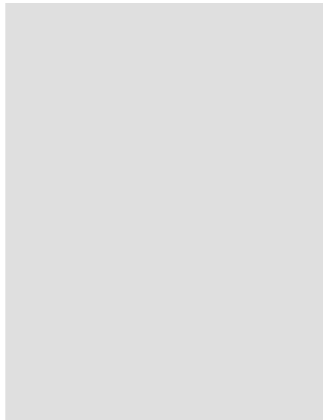
10. Welding Symbols and Abbreviations

1. Define the following terms:

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- 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.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Drawing Assignments	80%
Tests	20%

Date:

June 11, 2020

Addendum:

Please refer to the course outline addendum on the Learning Management System for further information.

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