Lakeshore Technical College

31442385 Welding Print Reading

Course Outcome Summary

Course Information

Description ...prepares the learner to apply orthographic projection principles and AWS welding symbols as they relate to welding fabrications. Students will learn the basics of print reading including alphabet lines, tolerances, bill of materials, title blocks, and revision blocks.

Total Credits 1

Total Hours 36

Course Competencies

1. Identify the types of lines and views found on prints commonly used in the metal working field

Assessment Strategies

1.1. Review Questions
1.2. Written Objective Test

Criteria

1.1. you identify basic types of lines and views found on a metalworking drawing with minimum grade of 80%.
1.2. you satisfactorily complete the written objective test.

Learning Objectives

1.a. Identify and describe alphabet lines and how they are used on a metalworking drawing
1.b. Identify two different methods in which an object can be represented on a drawing
1.c. Identify the proper orientation of views used on an orthographic projection drawing

2. Perform basic sketching techniques

Assessment Strategies

2.1. Review Questions
2.2. Written Objective Test

Criteria

You will know you are successful when:

2.1. you perform basic sketching techniques.
2.2. you peform sketching techniques found on a metalworking drawing with minimum grade of 80%.
2.3. you satisfactorily complete the written objective test.

Learning Objectives

2.a. Discuss the purpose of sketching and how it relates to metalworking drawings
2.b. Create an orthographic sketch
2.c. Create an oblique pictoral drawing
2.d. Create an isometric pictoral drawing

3. Interpret how notes and specifications are used on metalworking drawings

Assessment Strategies

3.1. Review Questions
3.2. Written Objective Test

Criteria

You will know you are successful when:

3.1. you identify how notes and specifications pertain to metalworking drawing with minimum grade of 80%.
3.2. you satisfactorily complete the written objective test.

Learning Objectives

3.a. Identify the typical information contained within a title block
3.b. Describe the difference between a general note and a local note
3.c. Identify the proper location for specifications

4. Interpret dimensions and dimensioning systems used on metalworking prints

Assessment Strategies

4.1. Review Questions
4.2. Written Objective Test

Criteria

4.1. you identify demensions and demensioning systems used on metalworking drawings with minimum grade of 80%.
4.2. you satisfactorily complete the written objective test.

Learning Objectives

4.a. Identify and describe the difference between size and location dimensions
4.b. Identify common terms used with dimensioning
4.c. Describe what a tolerance is and how it relates to fabrication accuracy

5. Interpret a bill of materials for detailed specifications of individual parts that make up weldments

Assessment Strategies

5.1. Review Questions
5.2. Written Objective Test

Criteria

5.1. you interpret a bill of materials for detailed specifications on a metalworking drawing with minimum grade of 80%.
5.2. you satisfactorily complete the written objective test.

Learning Objectives

5.a. Describe the importance of a bill of materials (BOM)
5.b. Identify item number, quantity and description of a particular part by looking at a bill of materials (BOM)

6. Identify common structural shapes that are used in the metal working field

Assessment Strategies

6.1. Review Questions
6.2. Written Objective Test

Criteria

You will know you are successful when:

6.1. you interpret a common structural shapes used in a metalworking drawing with minimum grade of 80%.
6.2. you satisfactorily complete the written objective test.

Learning Objectives

6.a. Use appropriate terminology to describe structural shapes
6.b. Identify common structural shapes used in weldments by shape
6.c. Use mill steel book to identify pipe sizes based on the schedule number system

7. Identify detailed, auxilary, assembly drawings and how they pertain to metalworking drawings

Assessment Strategies

7.1. Review Questions
7.2. Written Objective Test

Criteria

You will know you are successful when:

7.1. you identify detailed, auxillary and assembly drawings and how they pertain to metalworking drawings with minimum grade of 80%.
7.2. you satisfactorily complete the written objective test.

Learning Objectives

7.a. Determine when a detailed drawing should be used and the proper placement of the detail
7.b. List the components that make up a detailed drawing
7.c. Identify an auxillary view and describe when it is typically used
7.d. Determine the proper location of an enlarged view
7.e. List the components that make up an assembly drawing

8. Identify and interpret section views on a metalworking drawing or print

Assessment Strategies

8.1. Review Questions
8.2. Written Objective Test

Criteria

8.1. you identify and interpret section views on metalworking drawings with minimum grade of 80%.
8.2. you satisfactorily complete the written objective test.

Learning Objectives

8.a. Identify the six major section views used in metalworking drawings
8.b. Describe the purpose of using section veiws
8.c. Locate where section views can be found on a metalworking drawing

9. Explain the meaning and use of each element of a welding symbol

Assessment Strategies

9.1. Review Questions
9.2. Written Objective Test

Criteria

You will know you are successful when:

9.1. Explain the meaning and location of each elelent of a welding symbol with a minimum grade of 80%
9.2. you satisfactorily complete the written objective test.

Learning Objectives

9.a. List the basic elemnets of welding symbols
9.b. Interpret which side of the welded joint the weld gets placed on
9.c. Explain a welding symbol by developing a pattern to follow (Order of Operations)

10. Identify the five basic joints/types used in welding fabrications

Assessment Strategies

10.1. Review Questions
10.2. Written Objective Test

Criteria

You will know you are successful when:

10.1. you identify the five basic joints/types that are used in the metalworking process with minimum grade of 80%.
10.2. you satisfactorily complete the written objective test.

Learning Objectives

10.a. Identify butt, corner, tee, lap and edge joints
10.b. Use standard nomeclature used in joint geometry

11. Interpret welding symbols used for fillet and groove welds

Assessment Strategies

11.1. Review Questions
11.2. Written Objective Test

Criteria

11.1. you identify fillet and groove weld symbols found on a metalworking drawing with minimum grade of 80%.
11.2. you satisfactorily complete the written objective test.

Learning Objectives

11.a. Identify the fillet weld symbol
11.b. Identify the size of a fillet weld
11.c. Identify length and pitch of a fillet weld
11.d. Identify the characteristics of an offset fillet weld
11.e. Identify the two types of intermittent fillet welds (chain and staggered intermittent fillet weld)
11.f. Determine the type of groove weld to be prepared and welded
11.g. Determine groove weld size
11.h. Determine the groove angle and root opening
11.i. Determine the contour and finishing for fillet and groove welds

12. Interpret welding symbols used for backing, plug and slot welds

Assessment Strategies

12.1. Review Questions
12.2. Written Objective Test

Criteria

12.1. you identify backing, plug and slot welds and how they pertain to metalworking drawing with minimum grade of 80%.
12.2. you satisfactorily complete the written objective test.

Learning Objectives

12.a. Discuss the purpose of the "back or backing" and "melt-thru" welds
12.b. Determine the size of a backing and melt-thru welds
12.c. Distinguish between a plug weld from a slot weld on a drawing
12.d. Determine size, weld size, quantity, included angle, length and pitch of plug and slot welds
12.e. Determine the contour and finish of a plug, slot, back and melt-thru welds

13. Interpret welding symbols used for edge, spot, projection, seam, surface and stud welds

Assessment Strategies

13.1. Review Questions
13.2. Written Objective Test

Criteria

You will know you are successful when:

13.1. you interpret welding symbols used for edge, spot, projection, seam, surface and stud welds used on a metalworking drawing with minimum grade of 80%.
13.2. you satisfactorily complete the written objective test.

Learning Objectives

13.a. Distinguish the characteristics of edge, spot, projection, seam, surface and stud welds
13.b. Identify typical joints to which edge weld symbols are applied
13.c. Identify the size, strength, quantity, pitch and welding processes of a spot weld
13.d. Translate dimensions to edge, spot, projection, seam, surface and stud welds and how they are applied
13.e. Determine the contour and finish of edge, spot, projection, seam, surface and stud welds
13.f. Determine the proper location of stud welds on a metalworking drawing
13.g. Determine the diameter, quantity and pitch of a stud welds