

ISET-1101: WELDING BLUE PRINT READING

Cuyahoga Community College

Viewing: ISET-1101 : Welding Blue Print Reading

Board of Trustees:

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Academic Term:

Spring 2023

Subject Code

ISET - Integrated Systems Engineering

Course Number:

1101

Title:

Welding Blue Print Reading

Catalog Description:

Explore the techniques of reading blueprint and welding symbols relating to the welding field, including the proper way to read and apply measurements and dimensioning pertaining to industrial blueprints and metal specifications. Includes how to understand and interpret views and translate measurements and dimensions.

Credit Hour(s):

3

Lecture Hour(s):

3

Requisites

Prerequisite and Corequisite

None.

Outcomes

Course Outcome(s):

Interpret technical information used on industrial working and assembly drawings.

Objective(s):

1. Identify and describe the proper use of types of lines found on a print.
2. Explain the various methods used to reproduce a drawing.
3. Describe the advantages of developing drawings with a CAD system.
4. Explain traditional printmaking processes.
5. List precautions in the care of prints.
6. Describe the various processes for making original drawings.
7. Identify and explain the significance of the principle views on a multi-view drawing.
8. Recognize and explain how the major types of section views are read and used on a print.
9. Identify methods to read a print.
10. Describe two types of working drawings.
11. Explain the similarities and differences among types of working drawings and specialized drawings.
12. Identify information found on a parts list.
13. Locate and explain the purpose of information found in the title block.
14. Recognize and explain other formats appearing on prints, including sheet size, zoning, and security classification.

Course Outcome(s):

Analyze and decipher complex welding symbols listed as defined by the American Welding Society (AWS).

Objective(s):

1. Explain the importance of welding information found on a print.

2. List the basic elements of a welding symbol and explain the meaning of each.
3. Interpret which side of the weld joint the weld is placed.
4. Identify and interpret non-preferred weld symbols.
5. Explain a welding symbol by developing a pattern to follow.

Course Outcome(s):

Demonstrate measurement skills using inch and metric conversion.

Objective(s):

1. Read a fractional inch, decimal inch, and metric graduated rule.
2. Convert linear measurements between units.
3. Convert between decimal fractions and common fractions.
4. Interpret measurement information on drawings.
5. Use a fractional inch, decimal inch, and metric rule to make linear measurements.

Course Outcome(s):

Solve simple math problems related to working with print dimensions and tolerances.

Objective(s):

1. Add, subtract, multiply, and divide common fractions.
2. Add, subtract, multiply, and divide decimal fractions.
3. Add, subtract, multiply, and divide metric measurements.
4. Identify features of a circle and calculate the circumference and area.
5. Identify common types of angles and calculate supplementary and complementary angles.
6. Identify features of a right triangle, calculate area, and use the Pythagorean Theorem.

Methods of Evaluation:

- a. Quizzes covering homework and in-class demonstrations
- b. Classroom participation
- c. Final exam

Course Content Outline:

- a. Concepts
 - i. Prints – The language of industry
 - ii. Fractions and decimals
 - iii. Alphabet of lines
 - iv. Understanding prints
 - v. Print format
 - vi. Basic plane geometry
 - vii. Dimensioning
 - viii. Types of prints
 - ix. Dimensioning welding prints
 - x. Welding processes
 - xi. Threaded fasteners
 - xii. Structural metal
 - xiii. Common types of joints and welds
 - xiv. Welding symbols
 - xv. Fillet welds
 - xvi. Groove welds
 - xvii. Plug and spot welds
 - xviii. Spot, seam and projection welds
 - xix. Surfacing welds
 - xx. Flange and sheet metal welds
 - xxi. Pipe welding
 - xxii. Brazed joints

- xxiii. Basic metalworking processes
- xxiv. Examining and testing welds
- b. Skills
 - i. Understand the meaning of lines and symbols on welding prints.
 - ii. Understand and visualize the different views on a welding print.
 - iii. Recognize the different types of welding prints and their application.
 - iv. Use basic plane geometry to solve fabrication problems.
 - v. Understand and apply different dimensioning systems used on print.
 - vi. Use U.S. customary and metric graduated rules.
 - vii. Identify the different symbols used to express fractional, decimal, angular, and geometric dimensioning.
 - viii. Understand the use of linear, angular, and geometric tolerancing.
 - ix. Calculate missing dimensions.
 - x. Understand the differences between, soldering, brazing, and welding.
 - xi. Understand the application of welding processes.
 - xii. Select the correct fastener as specified on print.
 - xiii. Identify basic joints by name and shape.
 - xiv. Identify weld types by name and shape.
 - xv. Describe the characteristics of fillet, groove, and butt welds as expressed by print.
 - xvi. Interpret welding symbols.
 - xvii. Describe the characteristics of plug, spot, and projection welds as expressed by print.
 - xviii. Describe the characteristics of surface welds as expressed by print.
 - xix. Describe the characteristics of flange and sheet metal welds as expressed by the print.
 - xx. Describe the characteristics of a welded pipe system as expressed by print.
 - xxi. Describe the characteristics of a brazed joint as expressed by print.
 - xxii. By looking at the print, determine types of tests required by welding code required to verify quality of weld.
- c. Issues
 - i. Relate theory to practical application.

Resources

Althous, Turnquist, Bowditch, Bowditch, Bowditch. *Modern Welding*. 11th. Goodheart-Wilcox, 2012.

Walker, Polanin. *Welding Print Reading*. 6th. Goodheart-Wilcox, 2012.

Bennett, Siy. *Blueprint Reading for Welders*. 9th. Delmar, 2019.

Jeffus. *Welding, Principles and Applications*. 8th. Delmar, 2021.

Bohnart. *Welding Principles and Practices*. 5th. McGraw Hill, 2021.

Resources Other

U/LINC Learning Management System Lincoln Electric Education.

<http://education.lincolnelectric.com/the-lincoln-weld-school/educator-professional-courses/ulinc/>

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