

ATSM-1030: LAYOUT AND FABRICATION I

Cuyahoga Community College

Viewing: ATSM-1030 : Layout and Fabrication I

Board of Trustees:

March 2020

Academic Term:

Fall 2020

Subject Code

ATSM - Applied Ind Tech- Sheetmetal

Course Number:

1030

Title:

Layout and Fabrication I

Catalog Description:

Introduces various techniques that are required to layout and fabricate fittings from sheet metal. In addition, the transferring of measurements from mechanical and shop drawings, to fabrication of metal, and safety in using tools and machinery for cutting metal will be discussed.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

Outcomes

Course Outcome(s):

Apply different layout techniques required for sheet metal applications, including new construction and renovations involving basic applied math and measurement skills.

Objective(s):

1. Apply math concepts involving fractions and decimals.
2. Demonstrate the proper selection and use of sheet metal hand tools.
3. Identify two different methods of sheet metal layout.
4. Explain and apply radial line layout procedures.

Course Outcome(s):

Employ layout and cutting procedures that are required for ductwork fabrication and installations.

Objective(s):

1. Interpret shop drawings to identify the measurements necessary to properly design duct fabrications and transitions.
 2. Calculate and transfer measurements taken from mechanical and shop drawings to formulate the required layout on sheet metal.
 3. Use hand and power tools to cut and form sheet metal with seams and locks.
 4. Utilize hand tools and roll forming machinery to apply connectors to different ductwork shapes and sizes.
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Methods of Evaluation:

1. Tests
2. Quizzes
3. Class participation

Course Content Outline:

1. Layout Techniques
 - a. Math Concepts
 - i. Fractions
 - ii. Decimals
 - iii. Conversions
 - iv. Areas
 - b. Tool Selection
 - i. Layout Tools
 - ii. Cutting Tools
 - c. Layout Methods
 - i. Basic Measurement
 - ii. Parallel Line Development
 - iii. Radial line development
 1. Round transitions
 2. Tapered fittings
2. Fabrication
 - a. Drawing Interpretation
 - i. Mechanical
 - ii. Shop
 - b. Measurement Transfer
 - i. Calculation
 - ii. Layout
 - c. Hand and Power Tools
 - d. Machinery
 - e. Connector Fabrication
3. Installations
 - a. Duct sizing
 - b. Offset and fitting changes
4. Shop Fabrication Exercises

Resources

International Training Institute. *Layout Curriculum*. 1st. International Training Institute Alexandria, Va., 2010.

Budzik, Richard. *Today's 40 Most Frequently Used Fittings*. 5th. Practical Publications; Chicago, IL., 2010.

International Training Institute. *Sheet Metal Math*. 3rd. International Training Institute Alexandria, Va., 2017.

Resources Other

[www. \(http://www.sheetmetalworkbook.com/\)](http://www.sheetmetalworkbook.com/)**sheetmetalworkbook.com/**
[www.amazon.com/ \(http://www.amazon.com/Mathematics-Sheet.../\)](http://www.amazon.com/)**Mathematics-Sheet.../**
[www. \(http://www.sheetmetal-iti.org/careers/architectural.shtml/\)](http://www.sheetmetal-iti.org/careers/architectural.shtml/)**sheetmetal-iti.org/careers/architectural.shtml**
[www.fmastore.org/Precision- \(http://www.fmastore.org/Precision-Sheet-Metal-Mathematics-3rd-Edition-Text-P73.aspx\)](http://www.fmastore.org/Precision-Sheet-Metal-Mathematics-3rd-Edition-Text-P73.aspx)**Sheet-Metal-Mathematics-3rd-Edition-Text-P73.aspx**
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