ISET-1340: INDUSTRIAL PIPING AND TUBING

Cuyahoga Community College

Viewing: ISET-1340 : Industrial Piping and Tubing

Board of Trustees:
2006-05-25

Academic Term:
Fall 2018

Subject Code
ISET - Integrated Systems Engineering

Course Number:
1340

Title:
Industrial Piping and Tubing

Catalog Description:
Concepts and principles specific to piping, pipefitting, and tubing techniques, materials, routing and layout including types of material, cutting, threading, measurements, fittings, bending, and offsets. Extensive guided instruction and practice provided.

Credit Hour(s):
2

Lecture Hour(s):
1

Lab Hour(s):
2

Requisites

Prerequisite and Corequisite
ISET-1300 Mechanical/Electrical Print Reading

Outcomes

Course Outcome(s):
A. Apply safety procedures and practices while installing and repairing piping and tubing systems.

Objective(s):
1. Identify safety procedures according to OSHA standards
2. Apply Lock-out tag-out procedures
3. Apply safety procedures using torches and cutting tools

Course Outcome(s):
C. Identify and select appropriate piping and tubing material, size, fittings and flanges to install and repair piping and tubing systems.

Objective(s):
1. Discuss piping materials
2. Recognize limitations of different piping and tubing materials
3. Identify terminology related to piping and tubing
4. Identify proper fittings for material applications
5. Employ industrial standards related to piping and tubing installations

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Course Outcome(s):
D. Properly cut, thread, and fit pipe segments and semi-rigid tubing.

Objective(s):

1. Identify and apply proper cutting tools for different piping materials
2. Demonstrate proper threading techniques
3. Discuss fitting and assembly procedures for piping materials
4. Demonstrate pipe and tubing support and mounting

Course Outcome(s):

E. Bend segments of pipe and semi-rigid tubing.

Objective(s):

1. Identify methods of bending pipe and tubing
2. Recognize the need for proper bending techniques
3. Apply proper bending tools
4. Demonstrate accurate offsets for piping

Course Outcome(s):

F. Use appropriate methods and procedures for pipe joining.

Objective(s):

1. Practice safety procedures regarding torches and soldering tools
2. Recognize proper materials for soldering and brazing
3. Explain the use of flux
4. Demonstrate soldering and brazing techniques

Course Outcome(s):

G. Use appropriate trouble shooting methods when installing and repairing piping and tubing systems.

Objective(s):

1. Explain troubleshooting procedures for piping and tubing systems
2. List possible problems arising from improper installations
3. Apply blueprints for troubleshooting

Course Outcome(s):

B. Recognize and interpret engineering drawings in order to install and repair piping and tubing systems.

Objective(s):

1. Convert decimals and percentages
2. Recognize and interpret mechanical drawings
3. Identify symbols used in blueprints
4. Demonstrate freehand blueprint sketching
5. Identify reference points
6. Identify the characteristics and features of linear measurements
7. Interpret units and standards of measurement

Methods of Evaluation:

1. Periodic quizzes
2. Exams
3. Classroom participation
4. Completion and demonstration of assigned projects

Course Content Outline:

1. Concepts
    a. OSHA Safety standards & procedures
    b. Lockout / Tag-out
    c. Principles of torque
    d. Terminology
    e. System assembly
    f. Friction

   g. Dissimilar metals in piping materials
   h. Principles of fluid and air pressure
   i. Principles of electrical grounding
   j. Proper bending techniques
   k. Line diagrams
   l. Piping and tubing materials and applications
   m. Techniques of joining and assembling piping and tubing materials
   n. Tools (features, applications & functions)
   o. Meters and instrumentation
   p. Installation procedures
   q. Troubleshooting procedurs
2. Skills
   a. Measuring, cutting, threading, and joining of piping and tubing
   b. Print reading
   c. Troubleshooting (fundamentals)
   d. Freehand sketching
   e. Component applications
   f. Customer Service
   g. Meter reading
   h. Brazing
   i. Soldering
   j. Tool applications
   k. Bending Pipe
   l. Cutting Pipe
   m. Installing piping materials
3. Issues
   a. Piping material limitations
   b. Relate drawings to design applications
   c. Identifying quality manufactures
   d. Environment
   e. Communication
   f. Math

Resources

Mandrell D., Nussbaum A., and Orr A. *Reading Technical Diagrams.* 3nd ed. Schoolcraft Publishing, Livonia, MI, 2004.

Olivo, T.C.and Olivo, C.T. *Basic Blueprint Reading and Sketching.* 7th ed. Delmar Publishing, Clifton Park, NY, 2003.

Green, Denis and Gosse, Jonathan F. *Industrial Maintenance.* 2nd. American Technical Publishers, Homewood, Ill., 2000.

Resources Other

1. Amatrol Software

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