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Course Prefix/No.: IMT 151  
Course Title: Piping Systems  
Lecture Hours/Week: 2.0  
Lab Hours/Week: 3.0  
Credit Hours/Semester: 3.0

[Distance Learning Attendance/VA Statement](#)  
[Textbook Information](#)

## **COURSE DESCRIPTION**

This course covers plumbing and piping systems used in industrial, commercial and/or residential construction. Emphasis will be placed on the reading and sketching of piping schematics as well as the fabrication and design of piping systems.

## **COURSE COMPETENCIES**

Upon successful completion of this course, the student should be able to:

### **Module 1 - Piping Fundamentals**

- Demonstrate personal and shop safety at all times.
- Identify the most commonly used piping systems.
- List and identify the common hand tools that are used in piping systems.
- List and identify the common power tools that are used in piping systems.
- Demonstrate the proper use and care of hand and power tools.
- Define and explain the importance of threads pitch and length.
- Define the term fitting(s) when referring to piping systems.
- List and identify the different fitting types that will be used in each piping system.
- Calculate for fitting allowance.
- Identify the function and name of the most common valves that are used in piping systems.

### **Module 2 - Print Reading and Sketching**

- Draw and identify the symbols that are used to represent the components that are used in piping systems.
- Interpret both Isometric as well as Orthographic drawings.
- Explain and identify the two different types of Orthographic views.
- Identify the difference between waste and supply piping systems in a drawing.
- Create a sketch of given piping system using the proper symbols.
- Interpret intended piping dimensions and routes using a sketch.
- Retrieve center-to-center measurements on a piping sketch.

### **Module 3 - Copper Piping Systems**

- Discuss what it is to sweat a copper piping system.
- Identify copper pipe fittings and explain the use and purpose for each.
- Create a material take-off list for a given installation of a copper piping system.

- Determine the proper length of pipe that is needed while considering proper fitting allowance.
- Measure and cut copper pipe to proper lengths for accurate assembly.
- Perform proper cleaning and preparation procedures for the sweating of copper piping systems.
- Assemble and sweat the appropriate fittings and/or valves to the copper piping as to ensure a joint which produces no leaks when tested under pressure.
- Measure and cut copper tubing to proper lengths for accurate assembly.
- Identify copper tubing fittings and explain the use and purpose for each.
- Determine the proper length of tubing that is needed for a given installation.
- Measure and cut copper tubing to proper lengths for accurate assembly.
- Perform proper cleaning and flaring procedures used to assemble fittings.
- Assemble the appropriate fittings and/or valves to the copper tubing as to ensure a joint which produces no leaks when tested under pressure.

#### **Module 4 - Plastic Piping Systems**

- List and identify the most common types of plastic piping systems.
- Identify fittings for plastic piping systems and explain the use and purpose for each.
- Create a material take-off list for a given installation of a plastic piping system.
- Determine the proper length of pipe that is needed while considering proper fitting allowance.
- Measure and cut pipe to proper lengths for accurate assembly.
- Perform proper cleaning and preparation procedures for the cementing or crimping of plastic piping systems.
- Assemble and cement/crimp the appropriate fittings and/or valves to the plastic piping as to ensure a joint which produces no leaks when tested under pressure.

#### **Module 5 - Steel Piping Systems**

- List and identify the most common types of steel and iron piping systems.
- Identify fittings for steel piping systems and explain the use and purpose for each.
- Create a material take-off list for a given installation of a rigid steel piping system.
- Determine the proper length of pipe that is needed while considering proper fitting allowance.
- Measure and cut pipe to proper lengths for accurate assembly.
- Perform proper cleaning and preparation procedures for the threading of steel (rigid) piping systems.
- Properly thread steel pipe.
- Assemble the appropriate fittings and/or valves to the steel piping as to ensure a joint which produces no leaks when tested under pressure.
- Identify the difference between the thread pitches used on fluid piping systems and thread pitches used on electrical (rigid) piping systems.
- Create a material take-off list for a given installation of an electrical rigid piping system.
- Demonstrate the ability to calculate offsets and 90-degree bend deductions, as well as bend electrical metallic tubing (EMT) tubing.

#### **Module 6 - Joining of Various Piping Systems**

- Create a material take-off list for a given installation of a copper piping-to-copper tubing system and vice-versa.

- Create a material take-off list for a given installation of a copper piping/tubing-to-plastic piping system vice-versa.
- Create a material take-off list for a given installation of a copper piping/tubing-to-steel piping system and vice-versa.
- Create a material take-off list for a given installation of a plastic-to-steel piping system and vice-versa.

## MINIMAL STANDARDS

Assignments and attendance must be completed as designated in “Evaluation Strategies/Grading.” Criteria for minimal acceptable performance will be provided by the instructor.

## REQUIREMENTS:

### Attendance Policy

The college attendance policy, stated in the college handbook, will be honored. The instructor will provide specific requirements for the course.

### Academic Honesty

Students are expected to adhere to the college policy regarding student conduct as stated in the college handbook.

### Assignments

Students are expected to complete all assignments and any supplementary exercises designated by the instructor.

## EVALUATION STRATEGIES/GRADING

Successful completion of the course requires the completion of all modules with an average of 70 points. Grades will be calculated from work attitude, all tests/projects, homework assignments, and laboratory assignments.

### Grading Scale:

A = 90.0 - 100

B = 80.0 - 89.9

C = 70.0 - 79.9

D = 60.0 - 69.9

F = 00.0 - 59.9

### Evaluation Method:

Tests/Projects (minimum of four total)	40% for each Module
Lab Work	40% for each Module
Work Attitude	20% for each Module

Work Attitude is defined as:

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| <ul style="list-style-type: none"> <li>• Participation</li> <li>• Cooperation</li> <li>• Appearance</li> <li>• Effort</li> <li>• Safety</li> </ul> | <ul style="list-style-type: none"> <li>• Responsibility</li> <li>• Professionalism</li> <li>• Attendance</li> <li>• Self Motivation</li> <li>• Works Independently</li> </ul> |
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**METHODS OF INSTRUCTION**

Lectures, reading assignments, lab projects, discussions, video presentations, multimedia presentations, and web content are the major teaching methods used in this course.

**ENTRY LEVEL SKILLS**

A student entering this course should have an appropriate entrance score indicating an understanding of shop math and mechanical aptitude demonstrating interest in industrial mechanics.

**PREREQUISITES:** RDG 031 or equivalent and MAT 031 or equivalent

**CO-REQUISITES:** None

**Disabilities Statement:** Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Effective: 2010SP