

Course Outline
IMTC 215
PIPEFITTING: THEORY AND PRACTICE
4 Semester Hours

The Community College of Baltimore County

Description

Pipefitting: Theory and Practice

Studies the properties of various piping material and the principles underlying different methods of connecting these materials; develops skills in the use of the tools required for industrial pipefitting and plumbing, and designing and maintaining piping systems for water, oil, oxygen and high pressure steam lines.

Prerequisite: IMTC 101 – Industrial Measurements

Overall Course Objectives

Upon completion of this course the student will be able to:

- A. Describe the theory of pipefitting: flow, pressure, complete piping/flow system (pumps, valves, fittings, etc.)
- B. Identify pipe material used such as steel, copper, plastic, etc.
- C. Determine pipe size and strength.
- D. Describe the types of fittings and valves used in pipefitting.
- E. Identify the hand tools used in pipefitting.
- F. Sketch piping systems using the proper symbols.
- G. Determine the proper lengths of piping components in threaded systems.
- H. Describe the proper gasket materials used in piping systems.
- I. Prepare elevation, plan and isometric sketches of piping systems.
- J. Identify the various types and applications for copper pipe and tubing.
- K. Describe the tools and application used in assembling copper piping systems.
- L. Describe the tools and applications of plastic pipes and the techniques used to assemble plastic piping arrangements.
- M. Use O.H.S.A.'s rules in performing maintenance procedures when repairing an existing pipeline.
- N. Use O.H.S.A. safety rules on the preceding tasks.

Major Topics

List all major topics in outline form if appropriate

- I. Definitions, the complete piping system, identification of components
- II. Pipe sketching: orthographic and isometric views, lab project
- III. Trig relations that apply to pipefitting; the 30 degree, 45 degree and 90 degree angle fittings
- IV. Pipe threads, allowance for thread engagement, lab project
- V. Flow of fluids through pipes, calculating cut lengths, lab project,
- VI. Threaded fittings, calculating offset piping lengths, lab project
- VII. Calculating offset piping lengths, lab project

- VIII. Two pipe 45 degree equal spread offsets, lab project
- IX. Thermal expansion of pipe, pipe hangers, lab project
- X. Pipe strength calculations. Valves: types and applications, lab project
- XI. Rolling offset, calculation of 45 degree arrangements, lab projects
- XII. Course evaluation, rigid copper pipe: soldering and assembly, lab project
- XIII. Copper tubing, flare and compression fittings, lab project
- XIV. Steam systems, theory, operation and components, lab project

Course Requirements

Exams	75%
Quizzes	25%

(Subject to revision by the instructor)

Other Course Information