COURSE INFORMATION FORM

DISCIPLINE: Industrial Technology
COURSE TITLE: Industrial Pipefitting and Plumbing Fundamentals
CR.HR: 3
LECT HR: 2.5
LAB HR: 1
CLIN/INTERN HR: 
CLOCK HR: 

CATALOG DESCRIPTION

This course will teach the basic fundamentals of pipefitting and plumbing. The historical importance of these trades will be covered, as well as their modern day significance. Plumbing hardware and piping will be identified. Safety will be emphasized.

PREREQUISITES
INTE 140

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)

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

1. Identify the hazards associated with working in the trades and demonstrate safe operating procedures of power and hand tools.
2. Identify and explain the use of different types of pipes, tubing, fittings, and valves found in industry.
3. Measure and lay out pipe and tubing according to specifications.
4. Use a pipe threading machine to cut, ream, and thread pipe.
5. Calculate the take out on butt weld fittings.
6. Demonstrate how to bevel welded pipe with a plasma cutter.
7. Identify the major components of a compressor and a pneumatic system.
8. Troubleshoot and repair pneumatic equipment.
9. Choose the correct pump according to specifications.
10. Solder copper piping and bend copper tubing.
11. Explain what a Drain, Waste, and Vent (DWV) system is.
12. Construct a DWV system using PVC piping.
13. Repair and replace faucets, flush valves, vacuum breakers, and wax rings.
14. Explain what back flow prevention is and why it is so important.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>ESO</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Demonstrate safe work practices in the classroom and lab settings.
2. Demonstrate an understanding of pneumatic/hydraulic equipment.
3. Demonstrate ability to install and troubleshoot pneumatic/hydraulic components.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Assignments (1, 2, 5, 7, 9, 11, & 14)
2. Quizzes and exams (1-14)
3. Labs (3, 4, 6, 8, 10, 12, 13)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Hazards associated with pipefitting and plumbing
   A. Chemical hazards
   B. Job hazards
   C. Equipment hazards

II. Pipefitting fundamentals
    A. Pipe and tubing
    B. Measure, layout, and fabricate
    C. Pipe threading

III. Pipe welding
     A. Take out
     B. Welding pipe preparation

IV. Air compressors

V. Industrial pneumatic systems
   A. Solenoid actuated directional control valves
   B. Filter, regulators, lubricators (FRL)
   C. Cylinders and flow controls
   D. Troubleshoot and repair

VI. Plumbing Systems
    A. Potable water lines
    B. Drain, waste, vent (DWV)
    C. Power and hand auger
    D. Backflow prevention
VII. Fixtures and Hardware
   A. Sinks
   B. Wall mounted toilets
   C. Urinals
   D. Drinking fountains

VIII. Tools and installations

IX. Materials and purchasing