Pipe Fabrication & Installation (PFPB 2307)

Credit: 3 semester credit hours (2 hours lecture, 2 hours lab)

Prerequisite/Co-requisite:

Course Description

Pipe fabrication procedures of threaded, socketweld, and buttweld pipe joints. Includes pipe and tube bending with hand benders, saddling in and saddling on pipe braces to pipe headers, and fabrication and installation of pipe supports.

Required Textbook and Materials

1. *Audel Millwrights & Mechanics Guide* by Davis & Nelson 5th edition
2. ISBN number is 0-7645-4171-4

Course Objectives

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

1. Fabricate various types of pipe components. (SCANS C1.2; C2.1; C3.5; C4.3; C5.3; C6.4; C7.4; C8.1; C9.1; C10.2; C11.1 C12.1; C13.1; C14.3; C15.3; C16.2; C17.2; C18.3; C19.2; C20.2; F1.3; F2.2; F3.5; F4.5; F5.5; F6.3; F7.4; F8.4; F9.3; F10.5; F11.4; F12.4; F13.5; F14.5; F15.3; F16.5; F17.5)
2. Install various types of pipe components. (SCANS C1.2; C2.1; C3.5; C4.3; C5.3; C6.4; C7.4; C8.1; C9.1; C10.2; C11.1 C12.1; C13.1; C14.3; C15.3; C16.2; C17.2; C18.3; C19.2; C20.2; F1.3; F2.2; F3.5; F4.5; F5.5; F6.3; F7.4; F8.4; F9.3; F10.5; F11.4; F12.4; F13.5; F14.5; F15.3; F16.5; F17.5)
3. Fit and align various types of pipe connections. (SCANS C1.2; C2.1; C3.5; C4.3; C5.3; C6.4; C7.4; C8.1; C9.1; C10.2; C11.1 C12.1; C13.1; C14.3; C15.3; C16.2; C17.2; C18.3; C19.2; C20.2; F1.3; F2.2; F3.5; F4.5; F5.5; F6.3; F7.4; F8.4; F9.3; F10.5; F11.4; F12.4; F13.5; F14.5; F15.3; F16.5; F17.5)

SCANS Skills and Competencies

Beginning in the late 1980's, the U.S. Department of Labor **S**ecretary's **C**ommission on **A**chieving **N**ecessary **S**kills (SCANS) conducted extensive research and interviews with business owners, union leaders, supervisors, and laborers in a wide variety of work settings to determine what knowledge workers needed in order to perform well on a job. In 1991 the Commission announced its findings in *What Work Requires in Schools.* In its research, the Commission determined that "workplace know-how" consists of two elements: foundation skills and workplace competencies.

Course Outline

A. Introduction and safety
   a. Introduce Faculty
   b. Discuss Safety in Lab

B. Pipe identification and schedule
   a. Define and explain Schedule of Pipe

b. Show examples of Pipe

C. Pipe fittings identification and dimensioning
a. Show examples of fittings
b. Show how to id and measure fittings

D. Pipe fabrication techniques
a.Demonstrate hand threading
b.Demonstrate machine threading

E. Plastic Pipe preparation and assembly
a.Discuss plastic pipe prep and assembly
b.Demonstrate prep and assembly

F. Tubing assembly (compression and solder)
a.Demonstrate compression fitting of tubing
b.Demonstrate solder joints of tubing

G. Steel Pipe cutting and threading
a. Students hand cut and thread pipe
b. Students machine cut and thread pipe

H. Steel Pipe assembly
a. Students assemble pipe
b. Students disassemble pipe

I. Pipe tack welding
a. Students set up pipe for tack welding
b. Students tack pipe in place

J. Pipe alignment, instruments, and tools
a. Demonstrate tools
b. Demonstrate how to use tools

K. Pipe lifting, rigging, support, and safety
a. Demonstrate rigging to lift pipe
b. Have Students rig and lift pipe

L. Pipe fitting and alignment Techniques
a. Demonstrate fitting and alignment
b. Have students fit and align pipe

M. Pipe and fitting inspection and testing
a. Inspect student's work
b. Hydro test work

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

Activity	***Percentage***
Major test	75%
Class participation	25%

Course Requirements

1. Introduction to Pipe Fabrication
2. Install various types of pipe components
3. Fit and align various types of pipe connections
4. Apply procedures for bending pipe and tubing to specific dimensions

Attendance Policy

1. 5 absences allowed-4 lates are equivalent to 1 absence.
2. 2 points per absence off final grade after 3 initial absences.

Course Policies

1. No food, drinks, or use of tobacco products in class.
2. No foul or harsh language will be tolerated
3. Turn off all Cell Phones during lectures
4. Headphones may be worn only upon Instructor approval
5. Do not bring children to class.
6. No Cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result from expulsion from LIT.
7. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.
8. Proper Dress It is the student's responsibility to dress for work in an industrial atmosphere, long pants, shirts with sleeves, substantial footwear (no sandals, flip flops, cloth shoes), safety glasses and hard hats will be required. Students will be required to be clean shaven to be able to achieve a seal in respirators and fresh air packs.
9. Internet Usage
    a. Classroom computers have access to the internet.
    b. Student usage of the internet will be monitored.
    c. Proper usage of the internet will be allowed. Used for classroom research or as directed.
    d. Any unauthorized use of the internet will not be tolerated.
    e. Improper usage of the internet, such as profanity, pornography, gambling, etc… will result in disciplinary action not limited to expulsion from LIT.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for

reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Course Schedule

Week	Topic	Reference
1	Course introduction and policies • Lecture • Lab: Practice Drawing	Handouts
2	Introduction to Pipe Fabrication • Lecture: Safety • Lab: Practice	Chapter 1
3	Pipe Threads • Lecture • Lab: Practice	Chapter 27
4	Pipe Measurement • Lecture • Lab: Practice	Chapter 27
5	Piping Offsets • Lecture • Lab: Practice	Chapter 27
6	Layout Procedure • Lecture • Lab: Practice	Chapter 27
7	Pipe Valves • Lecture • Lab: Practice	Chapter 28
8	Pipe Valves • Lecture • Lab: Practice	Chapter 28
9-16	Pipe Valves - Installation • Lecture • Lab: Practice	Chapter 28

Contact Information

Instructor: Mr. William C. (Bill) Holton

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Office Hours: 10:30 am -2:30 pm M-F