

COURSE SYLLABUS

LAYOUT INSTRUMENTS FOR IRONWORKERS

Course Description:

This course is designed to provide the Iron Worker student with training in using basic layout tools, performing mathematics for layout work, using automatic levels, lasers, theodolites, transits, and total stations.

Course Objective:

The objective of this course is to enable a student to use layout instruments including automatic levels, lasers, theodolites, transits, and total stations.

Learning Outcomes:

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

- Describe the history of surveying and layout.
- Define layout terminology.
- Use basic layout tools.
- Perform mathematics for layout work.
- Use automatic levels.
- Use handheld and automatic lasers.
- Use theodolites and transits.
- Use total stations.

Target Audience:

This course is mandatory for all Apprentices and available to Journeymen.

Length of Course:

This course is designed to be offered during a minimum total of 20 hours – 10 hours of classroom instruction and 10 hours of hands-on lab or shop training.

Course Materials:

- **Layout Instruments for Ironworkers** Reference Manual
- **Layout Instruments for Ironworkers** Student Workbook
- **Layout Instruments for Ironworkers** Instructor Guide (for instructors only)
- **Layout Instruments for Ironworkers** DVD (for instructors only)
- **Assignment Sheets** (in the Student Workbook)
- **Job Sheets** (in the Student Workbook)
- **Tests** (in the Instructor Guide)

A Word about Safety

The importance of safety will be addressed and reinforced in all hands-on activities in the classroom, in the shop, and on the job site.

Course Assignments:

There are assignment sheets included as part of the units of instruction. Students will complete these assignment sheets prior to and/or during course session as determined by the instructor. Job sheets will be completed as part of each unit. Most job sheets will be completed in the lab or shop area and/or outside in a work area.

Course Grading Criteria:

To successfully complete this course, the student must complete all of the assignment sheets, demonstrate the required skills in the lab or shop, and pass the knowledge tests.

Topics/Activities

Introductions

Review of the course syllabus including the course objectives

Discussion of classroom and outside assignments and shop activities

Unit 1: Introduction to Layout

Lecture and discussion

Test – Unit 1

Unit 2: Basic Layout Tools

Lecture and discussion

Skills demonstrations and apprentices practice

Test – Unit 2

Unit 3: Mathematics for Layout Work

Lecture and discussion

Test – Unit 3

Unit 4: Automatic Levels

Lecture and discussion

Skills demonstrations and apprentices practice

Test – Unit 4

Unit 5: Lasers

Lecture and discussion

Skills demonstrations and apprentices practice

Test – Unit 5

Unit 6: Theodolites and Transits

Lecture and discussion

Skills demonstrations and apprentices practice

Test – Unit 6

Unit 7: Total Station

Lecture and discussion

Skills demonstrations and apprentices practice

Test – Unit 7

Skills demonstrations, apprentices practice and skills testing

Course summary and closing