

COURSE SYLLABUS

MATHEMATICS FOR IRONWORKERS

Course Description:

This course is designed to provide the Iron Worker student with training in basic numerical processes including whole numbers, common and decimal fractions, percentages, averages, exponents, roots, ratios and proportions, linear, area, circular and volume measurements and their Iron Worker applications. The course will also include an introduction to geometry, trigonometry, metrics and their Iron Worker applications.

Course Objective:

The objective of this course is to enable a student to apply basic mathematics to the ironworking trade.

Learning Outcomes:

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

- Perform addition, subtraction, multiplication, division and multiple operations with whole numbers and apply these operations to Iron Worker problems.
- Perform addition, subtraction, multiplication, division and multiple operations with common and decimal fractions and apply these operations to Iron Worker problems.
- Perform calculations involving percentages, averages, exponents, roots, ratios and proportions and apply these operations to Iron Worker problems.
- Perform calculations involving linear, area, circular and volume measurements and apply these operations to Iron Worker problems.
- Perform calculations using geometry involving points, lines and angles, triangles, quadrilaterals and be able to construct and bisect lines and angles and apply these operations to Iron Worker problems.
- Perform calculations using trigonometry involving right triangles and the Pythagorean Theorem, right triangles and the trigonometric functions, and oblique triangles and apply these operations to Iron Worker problems.
- Perform calculations involving basic metrics.

Target Audience:

- This course is designed for Apprentices and Journeymen.

Length of Course:

This course is designed to be offered during 30 hours of classroom instruction.

Course Materials:

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

Course Assignments:

There are several assignment sheets for each unit. Students will complete these assignment sheets prior to and/or during course sessions as determined by the instructor.

Course Grading Criteria:

To successfully complete this course, the student must complete all of the assignment sheets and pass the unit tests.

Topics/Activities

Introductions

Review of the course syllabus including the course objectives

Discussion of in class and outside assignments

Use of a scientific calculator on assignment sheets and tests

Unit 1 – Introduction to Mathematics

Students are to read Unit 2 for next session and complete the Unit 1 and Unit 2 assignment sheets

Completion of Unit 1 and completion of assignment sheets

Unit 2 – Whole Numbers

Review of the Unit 2 assignment sheets

Students are to prepare for the tests over Unit 1 and Unit 2

Tests – Unit 1 and Unit 2

Unit 3 – Common Fractions

Students are to review Unit 3 and work on the assignment sheets

Unit 3 – Common Fractions

Students are to review Unit 4 and work on the assignment sheets

Unit 4 – Decimal Fractions

Students are to prepare for the tests over Unit 3 and Unit 4

Tests – Unit 3 and Unit 4

Unit 5 – Percentages, Averages, Exponents and Roots

Students are to review Units 5 and 6 and work on the assignment sheets

Unit 5 – Percentages, Averages, Exponents and Roots

Session 8 Unit 6 – Ratio and Proportion
 Unit 7 – Measurement
 Students are to prepare for the tests over Unit 5 and Unit 6
 Students are to review Unit 7 and work on the assignment sheets

Session 9 Tests – Unit 5 and Unit 6
 Unit 7 – Measurement
 Students are to prepare for the test over Unit 7

Session 10 Test – Unit 7
 Course summary