

# Masonry I & II

**Program Description:** The Masonry course of study provides students with an opportunity to prepare for entry-level masonry jobs in residential and commercial construction and repair. Students learn to identify and use materials and tools necessary for success in the masonry industry. Students master a variety of skills in the trade relating to the building of foundations, laying of brick, block and tile, construction of various types of walls, as well as proper finishing techniques. Program standards are aligned with the National Center for Construction Education and Research (NCCER). Prior to performing any tasks in the lab setting, students are required to pass the NCCER safety examination. All students in the lab wear protecting clothing and gear appropriate for work in the masonry field.

## **Module 1: Introduction to Masonry**

**Unit Objective: Students will demonstrate an understanding of the Masonry profession including safety unique to the profession and procedures.**

### **Unit Competencies:**

1. Describe the modern masonry materials and methods.
2. Demonstrate proper use and maintenance of tools and equipment.
3. Demonstrate an understanding of the skills, attitudes, and abilities necessary to work as a mason.
4. Demonstrate safety precautions practiced at the masonry work site.
5. Perform basic bricklaying procedures.
6. Demonstrate the ability to mix mortar, lay a mortar bed and begin laying bricks.
7. Describe industry standards for quality control.

## **Module 2: Measurements Drawings and Specifications**

**Unit Objective: Students will demonstrate mastery in reading and interpreting drawings and measurement tools utilized in the masonry profession.**

### **Unit Competencies:**

1. Demonstrate the ability to work with denominate numbers.
2. Identify measurements using a mason's measure.
3. Recognize, identify and calculate areas, circumferences, and volumes of basic geometric shapes.
4. Identify the basic parts of a set of residential construction drawings.
5. Explain the organization of residential plans and drawings.
6. Interpret dimensions and scales on drawings.
7. Estimate material quantities from plans and drawings.
8. Discuss the different types of specifications used in the building industry and the sections that pertain to masonry.

## **Module 3: Mortar**

**Unit Objective: Students will demonstrate the use of mortar in brick and block applications.**

### **Unit Competencies:**

1. Identify and describe the primary ingredients and properties of mortar.
2. Identify the various types of mortar used in masonry work.
3. Properly set up the mortar mixing area.
4. Demonstrate proper mixing of mortar by hand and with a mechanical mixer.

## **Module 4: Masonry Units and Installation Techniques**

**Unit Objective: Students will demonstrate the ability to install masonry work.**

### **Unit Competencies:**

1. Describe the most common types of masonry units and bonds.

2. Describe and demonstrate how to set up a wall.
3. Demonstrate how to lay a dry bond.
4. Demonstrate how to spread and furrow a bed joint, and butter masonry units.
5. Demonstrate how to cut brick and block accurately.
6. Demonstrate how to lay masonry units in a true course.

### **Module 5: Residential Masonry**

**Unit Objective: Students will demonstrate basic masonry applications in residential construction.**

**Unit Competencies:**

1. Identify and explain the requirements for construction of various types of residential foundations.
2. Demonstrate the ability to lay out and build steps, patios, and decks made from masonry units.
3. Demonstrate the ability to lay out and build chimneys and fireplaces.

### **Module 6: Metal Work in Masonry**

**Unit Objective: Students will demonstrate competency in using various metal as reinforcement in masonry applications.**

**Unit Competencies:**

1. Describe the uses and installation of vertical reinforcement.
2. Explain the uses and installation of different types of horizontal joint reinforcements and ties.
3. Describe the functions of sills and lintels.
4. Demonstrate proper installation of sills, lintels and metal hardware.

### **Module 7: Advanced Laying Techniques**

**Unit Objective: Students will demonstrate the techniques necessary for a variety of special masonry structures.**

**Unit Competencies:**

1. Identify the structural principles and fundamental uses of basic types of walls.
2. Explain the requirement for and function of control joints and expansion joints.
3. Demonstrate proper reinforcement, jointing and bonding techniques of walls.
4. Lay out maintenance holes, segmented block walls and screens.
5. Identify and explain the different types of masonry arches and their applications.
6. Lay out a semicircular arch and a jack arch.

### **Module 8: Construction Techniques and Moisture Control**

**Unit Objective: Students will demonstrate techniques necessary for controlling moisture in masonry structures.**

**Unit Competencies:**

1. Demonstrate techniques for constructing masonry around windows, doors, and other openings.
2. Identify the requirements for wall bracing, and demonstrate the techniques used to construct pilasters and other types of bracing.
3. Identify the types of insulation used in conjunction with masonry construction and explain installation techniques.
4. Identify the need for moisture control in various types of masonry construction and the techniques used to eliminate moisture problems.
5. Demonstrate proper constructing of corbelling in a double-wythe wall.
6. Demonstrate joining of intersecting walls.
7. Demonstrate installation of flashing.

**Certifications:**  
**NCCER Safety**  
**OSHA -10 Safety**