

## NCCER MASONRY CURRICULUM

*The following is a brief description of subjects contained in all three levels of the masonry program as well as the core curricula that all level one students are expected to pass.*

### CORE CURRICULUM

*The core curricula provides a basic introduction to construction work for all crafts. The core curriculum consists of 9 modules taught through in-person instruction and supplemented by online programming.*

#### **Basic Safety**

Presents basic jobsite safety information to prepare workers for the construction environment. Describes the common causes of workplace incidents and accidents and how to avoid them. Introduces common personal protective equipment (PPE), including equipment required for work at height, and its proper use. Information related to safety in several specific environments, including welding areas and confined spaces, is also provided.

#### **Introduction to Construction Math**

Reviews basic math skills related to the construction trades and demonstrates how they apply to the trades. Covers multiple systems of measurement, decimals, fractions, and basic geometry.

#### **Introduction to Hand Tools**

Introduces common hand tools used in a variety of construction crafts. Identifies tools and how to safely use them. Proper hand tool maintenance is also presented.

#### **Introduction to Power Tools**

Identifies and describes the operation of many power tools common in the construction environment. Provides instruction on proper use, as well as on safe-handling guidelines and basic maintenance.

#### **Introduction to Construction Drawings**

Introduces the basic elements of construction drawings. The common components of drawings are presented, as well as the most common drawing types. The use of drawing scales and how to measure drawings is also covered.

#### **Basic Rigging**

Provides basic information related to rigging and rigging hardware, such as slings, rigging hitches, and hoists. Emphasizes safe working habits in the vicinity of rigging operations.

#### **Basic Communication Skills**

Provides good techniques for effective communication on the job. Includes examples that emphasize the importance of both written and verbal communication skills. Describes the importance of reading skills in the construction industry and covers proper techniques to use in a variety of different written communication formats.

#### **Basic Employability Skills**

Describes the opportunities offered by the construction trades. Discusses critical thinking and essential problem-solving skills for the construction industry. Also identifies and discusses positive social skills and their value in the workplace.

## **Introduction to Material Handling**

Describes the hazards associated with handling materials and provides techniques to avoid both injury and property damage. Common material-handling equipment is also introduced.

## **MASONRY – LEVEL ONE**

### **Introduction to Masonry**

Provides information about basic masonry materials, tools, techniques, and safety precautions; explains how to mix mortar by hand and lay masonry units; and describes the skills, attitudes, and abilities of successful masons.

### **Masonry Safety**

Describes how to identify the common causes of accidents and the hazards associated with masonry tools, equipment, mortar, and concrete. Provides information on using personal protective equipment, working safely from elevated surfaces, properly using masonry tools and equipment, and handling masonry materials safely.

### **Masonry Tools and Equipment**

Describes a variety of hand tools, measuring tools, mortar equipment, power tools and equipment, and lifting equipment that masons use on the job, and explains how to use these tools correctly and safely. Provides instructions for assembling and disassembling scaffolds.

### **Measurements, Drawings, and Specifications**

Reviews the calculation of distances and areas common in masonry work, describes the information found on residential construction drawings, and explains the role of specifications, standards, and codes.

### **Mortar**

Explains the types and properties of mortar and the materials used in the mixture, including admixtures, provides instructions for mixing mortar by machine and describes how to properly apply and store mortar.

### **Masonry Units and Installation Techniques**

Describes characteristics of block and brick; how to set up, lay out, and bond block and brick; how to cut block and brick; how to lay and tool block and brick; and how to clean block and brick once they have been laid. Provides information about masonry reinforcements and accessories used to lay block and brick professionally and safely.

## **MASONRY – LEVEL TWO**

### **Residential Plans and Drawing Interpretation**

Explains how to work with residential plans and construction drawings and convert that information into action on the job. Describes the organization and format of plans, dimensioning and scaling, and estimating material quantities from information on the plans.

### **Residential Masonry**

Covers the construction techniques for residential and small structure foundations, steps, patios, decks, chimneys, and fireplaces. Describes work activities that the mason must perform, as well as those that tie into the masonry work.

### **Reinforced Masonry**

Focuses on the use of grout and other types of reinforcement, such as reinforcing steel to strengthen and support masonry structures. Describes the locations where grout can be used and the techniques for placement. Discusses the use and application of various types of reinforced masonry elements, such as rebar and bond beam lintels.

### **Masonry Openings and Metalwork**

Introduces types of metal components, including metal rods, joint reinforcements, plates, anchors, fasteners, and hollow metal frames for doors and windows, and explains how they are installed.

### **Advanced Laying Techniques**

Describes the construction of masonry wall systems, weep vents, and joints. Includes safety requirements and interaction with structural components.

### **Effect of Climate on Masonry**

Describes materials and techniques used to apply insulation and methods of moisture control as they relate to the mason's craft. Includes hot-weather and cold-weather considerations.

### **Construction Inspection and Quality Control**

Introduces the quality control requirements for masonry construction. Presents procedures for inspection and testing of masonry materials and finished masonry construction.

## **MASONRY – LEVEL THREE**

### **Masonry in High-Rise Construction**

Describes activities involved in organizing and implementing the construction of high-rise buildings. Focuses on masonry construction techniques used in high-rise construction. Emphasizes safety and logistics.

### **Specialized Materials and Techniques**

Describes specialized materials and techniques used in the masonry craft. Covers properties and work requirements for such materials as natural and cultured stone, acid brick, refractory brick, structural tile, and glass block. Presents techniques for working under cold-weather and hot-weather conditions and explains construction of masonry sound barriers.

### **Repair and Restoration**

Explains problems that appear in masonry structures and describes techniques used to repair them, including tuckpointing, brick replacement, crack sealing, waterproofing, and stain removal.

### **Commercial Drawings**

Describes the format and content of commercial drawings and their use in conveying specific construction requirements. Explains the standard format for specifications.

### **Estimating**

Covers procedures for takeoffs and estimating quantities of masonry material and accessories. Several methods are described, including coursing, square foot, rule of thumb, and table methods. Introduces computer-based estimating aids.

### **Site Layout – Distance Measurement and Leveling**

Covers the principles, equipment, and methods used to perform distance measurement and differential leveling. Presents the layout responsibilities of surveyors, field engineers, and masons; how to understand and use site/plot plan drawings; and methods used for on-site communication.

### **Introductory Skills for the Crew Leader**

Covers project planning and scheduling techniques as well as coordination and communication of work assignments to masonry work crews and other crafts. Also describes project setup and materials purchasing requirements.



## **THE NCCER PROGRAM**

NCCER (National Center for Construction Education & Research) maintains a portable and widely recognized credentialing and certification system through its Registry. This Registry assures portability of skills by providing transcripts, certificates, and wallet cards to students who successfully complete the NCCER Curriculum through an accredited sponsor. These valuable industry credentials benefit students as they seek employment and build their careers. To be entered in NCCER's Automated National Registry, you must complete and sign a Registration and Release form. This form will be completed on the first night of class in each semester and requires your Social Security Number and your signature.

NCCER has developed a consistent program of accreditation, instructor certification, standardized curriculum, registry, assessment, and certification, which is a key element in developing a skilled workforce of craft professionals.

NCCER is the accrediting body for the industry and establishes the benchmark for quality training and assessments. By partnering with industry and academia, NCCER has developed a system for program accreditation that is similar to those found in institutions of higher learning. This process ensures that students receive quality training based on uniform standards and criteria.

The NCCER Curriculum, in cooperation with publishing partner Pearson, has developed and publishes a world-class curriculum created by "Subject Matter Experts" representing contractors and schools from around the country. "Subject Matter Experts" ensure exceptional training programs that meet or exceed national industry standards. The NCCER Curriculum, which includes more than 60 craft areas, is taught worldwide by contractors, associations, construction users, and secondary and post-secondary schools. In addition, multiple State Departments of Education recognize the curriculum along with the U.S. Department of Labor - Office of Apprenticeship.