

Building Construction Cluster 1, 2, 3, and 4 6060, 6061, 6062, 6063

If a student takes Introduction to Construction and scores 70% on all assessments (A-H), he or she does not have to repeat these modules in Air Conditioning and Refrigeration Technology, Building Construction, Cabinetmaking, Carpentry, Electricity, Masonry, Mechatronics, Plumbing, and Welding.

NCCER CONTREN® CORE MODULES

MODULE A: BASIC SAFETY

1. Identify the responsibilities and personal characteristics of a professional craftsperson.
2. Explain the role that safety plays in the construction crafts.
3. Describe what job-site safety means.
4. Explain the appropriate safety precautions around common job-site hazards.
5. Demonstrate the use and care of appropriate personal protective equipment.
6. Follow safe procedures for lifting heavy objects.
7. Describe safe behavior on and around ladders and scaffolds.
8. Explain the importance of the HazCom (Hazard Communication Standard) requirement and MSDs (Material Safety Data Sheets).
9. Describe fire prevention and fire fighting techniques.
10. Define safe work procedures around electrical hazards.
11. Complete 10-hour OSHA course/assessment and receive card. (SDE Requirement)

MODULE B: BASIC MATH

1. Add, subtract, multiply, and divide whole numbers, with and without a calculator.
2. Use a standard ruler and a metric ruler to measure.
3. Add, subtract, multiply, and divide fractions.
4. Add, subtract, multiply, and divide decimals, with and without a calculator.
5. Convert decimals to percents and percents to decimals.
6. Convert fractions to decimals and decimals to fractions.
7. Explain what the metric system is and how it is important in the construction trade.
8. Recognize and use metric units of length, weight, volume, and temperature.
9. Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them.

MODULE C: INTRODUCTION TO HAND TOOLS

1. Recognize and identify some of the basic hand tools used in the construction trade.
2. Use these tools safely.
3. Describe the basic procedures for taking care of these tools.

MODULE D: INTRODUCTION TO POWER TOOLS

1. Identify commonly used power tools of the construction trade.
2. Use power tools safely.
3. Explain how to maintain power tools properly.

MODULE E: INTRODUCTION TO BLUEPRINTS

1. Recognize and identify basic blueprint terms, components, and symbols.
2. Relate information on blueprints to actual locations on the print.
3. Recognize different classifications of drawings.
4. Interpret and use drawing dimensions.

MODULE F: BASIC RIGGING (Optional)

1. Explain how ropes, chains, hoists, loaders, and cranes are used to move material and equipment from one location to another on a job site.
2. Describe inspection techniques and load-handling safety practices.
3. Explain the American National Standards Institute (ANSI) hand signals.

MODULE G: BASIC COMMUNICATION SKILLS (SDE Requirement)

1. Explain techniques for communicating effectively with coworkers and supervisors.
2. Demonstrate verbal and written communication skills necessary in the workplace.
3. Demonstrate telephone and e-communication skills necessary in the workplace.

MODULE H: BASIC EMPLOYABILITY SKILLS (SDE Requirement)

1. Identify the roles of individuals and companies in the construction industry.
2. Explain the importance critical thinking and problem solving skills in the workplace.
3. Describe computer systems and their industry applications.
4. Explain interpersonal relationship skills, self-presentation, and key workplace issues such as sexual harassment, stress, and substance abuse.

Building Construction Standards 1, 2, 3, and 4

UNIT A: DEMONSTRATING BASIC KNOWLEDGE AND SKILLS REQUIRED TO FRAME A ONE-STORY BUILDING USING A SIMPLE PLAN

1. Measure, cut, and install headers and girders for a floor frame.
2. Measure, cut, and install floor joists.
3. Cut and install solid and/or X-bridging.
4. Install subfloor.
5. Construct corner and T-posts.
6. Install a double top plate.
7. Construct exterior walls and install corner braces.
8. Install ceiling joists and strongbacks.
9. Measure, cut, and install rafters and ridges.
10. Lay out and install a roof truss.
11. Install roof sheathing.
12. Install roofing, felt, flashing, ridge vent, and asphalt composition shingles.

UNIT B: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO INSTALL EXTERIOR FINISHING

1. Install exterior insulation, vapor barrier, and sheathing.
2. Install exterior finish materials.
3. Install doors and windows with flashing.

UNIT C: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO INSTALL INTERIOR FINISHING MATERIALS

1. Install doors and locks.
2. Install shelving.

UNIT D: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO CONSTRUCT FOOTING AND FOUNDATION WALLS

1. Lay out building site and set up batter boards.
2. Square building corners and mark excavation lines.
3. Pour concrete footing.
4. Set up mortar pan and mix ingredients for mortar.
5. Lay a stretcher course to a line.
6. Lay a full header course to a line.
7. Lay a common bond wall.
8. Construct a brick foundation wall.
9. Tool the brick joints.
10. Clean the brick wall.

UNIT E: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO INSTALL SWITCH AND OUTLET BOXES (NOT ENERGIZED)

1. Install lighting circuits to be switched from one or more locations.
2. Make electrical connections for lighting circuits.
3. Install duplex and split circuit outlet circuits.
4. Hang light fixtures from ceiling and bracket outlet boxes.
5. Install a GFCI outlet.

UNIT F: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO WORK SAFELY ON ELECTRICAL CIRCUITS

1. Demonstrate the ability to check for voltage on a circuit and to kill the power supply.
2. Demonstrate the ability to use hand and power tools safely while working on an electrical system.
3. Demonstrate the ability to recognize unsafe working conditions.
4. Complete an electrical safety test successfully.
5. Demonstrate the ability to use lock out/tag out.

UNIT G: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO APPLY THE NATIONAL ELECTRICAL CODE TO BASIC PRACTICAL PROBLEMS

1. Define basic terms used in the National Electrical Code.
2. Size conductors according to Article 310.
3. Size boxes according to Article 370.
4. Demonstrate the ability to reference the codebook.

UNIT H: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO CUT AND JOIN PLUMBING PIPE

1. Use hand tools to cut, clean, ream, and/or flare copper tubing.
2. Use hand tools to cut and clean plastic and C/PVC pipe.
3. Light, adjust, and use a torch to sweat copper tubing.
4. Clean and join PVC pipe.

UNIT I: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO INSTALL PLUMBING SYSTEMS

1. Rough in a water supply system.
2. Install plumbing fixtures.
3. Pressure test water supply system.
4. Repair leaks in valves and lines.

UNIT J: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO INSTALL DRAINAGE SYSTEMS

1. Install a wastewater system for a bathtub, over-flow, and trap.
2. Install a wastewater system for built-in lavatories.
3. Install a wastewater system for a floor mounted water closet.
4. Install a wastewater system for a double kitchen sink with a garbage disposal.
5. Rough-in waste lines and vent stacks.
6. Install cleanouts on wastewater lines.
7. Calculate the slope requirements for wastewater lines.
8. Pressure test wastewater lines.
9. Clean obstructions from wastewater lines.

The NCCER Construction Technologies Modules that are embedded in the standards above include the following:

Volume 1

Electrical

MODULE 26101-00 – ELECTRICAL SAFETY

MODULE 26111-00 – WIRING: COMMERCIAL AND INDUSTRIAL

Masonry

MODULE 28101 – INTRODUCTION TO MASONRY

MODULE 28106 – MASONRY UNITS AND INSTALLATION TECHNIQUES

Plumbing

MODULE 02105-00 – PLASTIC PIPE AND FITTINGS

MODULE 02106-00 – COPPER PIPE AND FITTINGS

MODULE 02110-00 – INTRODUCTION TO DRAIN, WASTE, AND VENT (DWV) SYSTEMS

Volume 2

Carpentry

MODULE 27104-01 – FLOOR SYSTEMS

MODULE 27105-01 – WALL AND CEILING FRAMING

MODULE 27106-01 – ROOF FRAMING

MODULE 27202-01 – SITE LAYOUT ONE: DISTANCE MEASUREMENT AND LEVELING

MODULE 27301 – EXTERIOR FINISHING

MODULE 27302 – ROOFING APPLICATIONS, Standards 1-4 only, and Standard 5, with the word “and hip” deleted.

MODULE 27304 - STAIRS

These modules were considered to be appropriate for the postsecondary level only:

Volume 1

Concrete Finishing

MODULE 23106 – PLACING CONCRETE

MODULE 23107 – FINISHING, PART ONE

Volume 2

Carpentry

MODULE 27302 – ROOFING APPLICATIONS, Standards 6-10 only.