

# BUILDING CONSTRUCTION TECHNOLOGY

## **BCT 100. Building Trades I** **8 Credits (2+12P)**

Equipment and general safety. Human relations, building construction surveying, footings, foundation form work, framing, sheathing, insulation. Basic electrical wiring and plumbing. Classroom instruction, on-the-job training, and problem solving.

## **BCT 101. Introduction to Construction I** **2 Credits (2+1P)**

Basic safety, including personal protective equipment, how to perform basic construction tasks safely, and what to do if an accident occurs. Includes basic construction methods. Restricted to Community Colleges campuses only.

**Corequisite:** BCT 102;BCT 103.

### **Learning Outcomes**

1. Students will be able to operate hand and power tools safely.
2. Demonstrate the ability to read construction drawings.
3. Work effectively as a team.
4. Demonstrate how related industry theories apply to real world settings.
5. Investigate mechanical processes found in building trades.
6. Identify and resolve ethical workplace issues.
7. Describe the responsibilities of safety related to the construction industry.
8. Students will be able to selected the proper tools for the job.

## **BCT 102. Introduction to Construction II** **2 Credits (2+1P)**

Introduction to power and hand tools, blueprints, and basic rigging hardware and techniques. Restricted to Community Colleges campuses only.

**Corequisite:** BCT 101;BCT 103.

### **Learning Outcomes**

1. Students will be able to operate hand and power tools safely.
2. Demonstrate the ability to read construction drawings.
3. Work effectively as a team.
4. Demonstrate how related industry theories apply to real world settings.
5. Investigate mechanical processes found in building trades.
6. Identify and resolve ethical workplace issues.
7. Describe the responsibilities of safety related to the construction industry.
8. Students will be able to selected the proper tools for the job.

## **BCT 103. Introduction to Construction Laboratory** **3 Credits (3)**

Provides students the opportunity to practice skills they have acquired in BCT 101 and BCT 102. It includes task-oriented projects in which students can apply many of the skills and knowledge that have been presented throughout the National Center for Construction and Education Research (NCCER) Carpentry Program. Restricted to Community Colleges campuses only.

**Corequisite:** BCT 101; BCT 102.

### **Learning Outcomes**

1. Demonstrate effectively leadership skills through the use of Students will be able to operate hand and power tools safely.
2. Demonstrate the ability to read construction drawings.
3. Work effectively as a team.
4. Demonstrate how related industry theories apply to real world settings.
5. Investigate mechanical processes found in building trades.
6. Identify and resolve ethical workplace issues.
7. Describe the responsibilities of safety related to the construction industry.
8. Students will be able to selected the proper tools for the job.
9. Work effectively as a team. 1
10. Demonstrate an awareness of the environmental problems arising from conventional practices.

## **BCT 104. Woodworking Skills I** **3 Credits (1+4P)**

Use and care of hand tools and elementary power tools, safety procedures, and supervised project construction.

## **BCT 105. Woodworking Skills II** **3 Credits (1+4P)**

Advanced woodworking skills to include use of advanced power tools, power tool safety, and supervised construction.

**Prerequisite:** BCT 104 or consent of instructor.

## **BCT 106. Woodworking Theory and Practice** **3 Credits (2+2P)**

History of wood manufacturing, industrial techniques, wood characteristics, stains and finishes. Design and construction of minor wood projects.

## **BCT 109. Plumbing I** **3 Credits (2+3P)**

Covers orientation to the trade. Students will learn about materials used in the plumbing industry and the different types of plumbing fixtures. It includes task-oriented projects in which the students apply many of the skills and knowledge that are presented through the National Center for Construction and Education Research (NCCER) Plumbing Program.

**Prerequisite/Corequisite:** BCT 101, BCT 102. Restricted to Community Colleges campuses only.

### **Learning Outcomes**

1. Describe the history of plumbing in construction.
2. Perform plumbing work safely.
3. Identify and utilize the correct tools.
4. Perform common math calculations related to plumbing.
5. Read plumbing-related prints and drawings.
6. Work with different piping materials.
7. Identify and install plumbing fixtures.
8. Install basic drain, waste and vent systems.
9. Identify major components of a water distribution system. 1
10. Explain water distribution system in a standard building.

## **BCT 110. Blueprint Reading for Building Trades** **4 Credits (2+4P)**

Same as DRFT 151, OEET 101, OEPB 110.

## **BCT 111. Small Equipment Maintenance and Repair** **4 Credits (2+4P)**

Covers small engine theory, troubleshooting and repair, auto maintenance, hydraulic theory and repair lubricants, batteries and scheduled tool maintenance. Restricted to: Community Colleges only.

#### **BCT 114. Basic Carpentry**

##### **3 Credits (1+4P)**

Covers orientation to the trade; wood building materials, fasteners, and adhesives; detailed description and explanations of hand-operated and power tools, including safety; framing basics including laying out and constructing of wood floors, walls and ceilings and includes roughing in of door and window openings. Restricted to Community Colleges campuses only.

**Corequisite:** BCT 115; BCT 116.

##### **Learning Outcomes**

1. Students will be able to operate hand and power tools safely.
2. Demonstrate the ability to read construction drawings.
3. Work effectively as a team.
4. Identify various types of building materials and their uses.
5. Calculate the quantities of lumber and wood products using industry standard methods.
6. Describe the fasteners, anchors and adhesives used in construction.
7. Describe the responsibilities of safety related to the construction industry.
8. Select proper tools for the job.
9. Identify the different grades and markings of wood building materials. 1
10. List and recognize different types of flooring materials. 1
11. Knowledge of the materials and methods used to construct floor systems using the platform method of floor framing. 1
12. Describe the procedure for laying out a wood frame wall. 1
13. Describe the correct procedure for laying out floor joist. 1
14. Estimate the materials required to frame a floor system.

#### **BCT 115. Carpentry Level I**

##### **3 Credits (1+4P)**

Describes the various kinds of roofs and provides instructions for lay out of the different roofing systems. Describes the various types of windows, skylights, and exterior doors and provides instruction for installation.

Restricted to Community Colleges campuses only.

**Corequisite:** BCT 114; BCT 116.

##### **Learning Outcomes**

1. Students will be able to operate hand and power tools safely.
2. Demonstrate the ability to read construction drawings.
3. Work effectively as a team.
4. Identify various types of building materials and their uses.
5. Calculate the quantities of lumber and wood products using industry standard methods.
6. Describe the fasteners, anchors and adhesives used in construction.
7. Describe the responsibilities of safety related to the construction industry.
8. Select proper tools for the job.
9. Identify the different grades and markings of wood building materials. 1
10. List and recognize different types of flooring materials. 1
11. Knowledge of the materials and methods used to construct floor systems using the platform method of floor framing. 1
12. Describe the procedure for laying out a wood frame wall. 1

13. Describe the correct procedure for laying out floor joist. 1

14. Estimate the materials required to frame a Floor System.

#### **BCT 116. Basic Carpentry Lab**

##### **2 Credits (2)**

Provides students the opportunity to practice skills they have acquired in BCT 114 and BCT 115. It includes task-oriented projects in which students can apply many of the skills and knowledge that have been presented throughout the National Center for Construction and Education Research (NCCER) Carpentry Program. Restricted to Community Colleges campuses only.

**Corequisite:** BCT 114; BCT 115.

##### **Learning Outcomes**

1. Demonstrate the correct selection, use, and care of various hand tools.
2. Demonstrate the correct selection, use, and care of various power tools.
3. Recognize and Read basic blueprint terms, components, and symbols.
4. Recognize and identify different classifications of drawings.
5. Lay out and frame a complete roof structure.
6. Be able to layout and set up concrete forms.
7. Build a Staircase.
8. Install windows and exterior doors properly.

#### **BCT 118. Math for Building Trades**

##### **3 Credits (3)**

Geometry, algebra, arithmetic, and basic trigonometry pertaining to mathematical applications in the building trades field. Same as OEET 118, DRFT 118, OEPB 118.

**Prerequisite:** CCDM 103 N.

#### **BCT 123. Residential Wiring I**

##### **3 Credits (2+3P)**

Introduction to residential electrical wiring trade, electrical safety practices, basic electrical circuits and theory, reading and interpreting applicable construction prints/drawings, introduction to basic National Electric Code (NEC), and preparation for entry-level employment in residential electrical wiring. Restricted to Community Colleges campuses only.

#### **BCT 130. Professional Development and Leadership**

##### **1 Credit (1)**

As members and/or officers of various student professional organizations, students gain experience in leadership, team building, and community service. Students competing or participating in Skills USA are required to register for the course. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: BCT majors. Graded: S/U Grading (S/U, Audit). Restricted to: Community Colleges only.

#### **BCT 150. Forklift Operation**

##### **1 Credit (1)**

Classroom instruction and hands-on practice to prepare students to operate a forklift safely in the workplace. Students will have the opportunity to earn a forklift operator's permit. Consent of Instructor required. Restricted to Community Colleges campuses only.

#### **BCT 200. Building Trades II**

##### **8 Credits (2+12P)**

Continuation of BCT 100: roofing; exterior and interior finish; masonry; door, window, and cabinet installation.

#### **BCT 206. Advanced Cabinetmaking**

##### **3 Credits (1+3P)**

Advanced cabinetmaking skills, to include expert use of hand and power tools, professional construction and finishing techniques.

**Prerequisites:** BCT 105, BCT 106, or consent of instructor.

### **BCT 209. Plumbing II**

#### **3 Credits (2+3P)**

Continuation of BCT 109. Provides students the opportunity to gain more practice in the skills and knowledge learned in Plumbing I. Students will install fixtures and run the various plumbing supply lines from Plumbing Level I. The course included hands on projects in which the students apply many of the competencies that have been presented through the National Center for Construction and Education Research (NCCER) Plumbing Program.

**Prerequisite/Corequisite:** BCT 109.

#### **Learning Outcomes**

1. Work with copper tubing and fittings.
2. Practice safety related to the plumbing trade.
3. Work with cast iron pipe and fittings.
4. Work with steel pipe and fittings.
5. Perform calculations related to the plumbing trades.
6. Read plumbing blueprints and drawings.
7. Install plumbing fixtures.
8. Install and design drain, waste and vent systems.
9. Identify the major components of water distribution systems and describe their functions.

### **BCT 217. Building and the Environment**

#### **3 Credits (3)**

Introduction to LEED's, and Green Building Fundamentals, sustainability, sustainable design and green building evaluating cost implication of green building. Describes site development; managing site water runoff, improving a project's water use efficiency. Discusses renewable energy sources, and introduces student to generating power on-site using renewable energy sources, improving a building's indoor environment quality, improving the building industries' environmental performance and environmental aspects of building maintenance, re-use and conservation. Restricted to: Community Colleges only.

### **BCT 219. Weatherization in Construction**

#### **3 Credits (2+2P)**

Introduction to industry weatherization standards and practices utilized in the construction of buildings for the purpose of energy conservation. Economic and environmental impacts of the use of energy in heating and cooling building will be examined.

**Prerequisite(s):** BCT 101, BCT 102 and BCT 103.

### **BCT 221. Cooperative Experience I**

#### **1-4 Credits**

Supervised cooperative work program. Student is employed in an approved occupation and is supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U.

**Prerequisite:** consent of instructor.

### **BCT 223. Residential Wiring II**

#### **3 Credits (2+3P)**

Introduction to electrical raceways and fittings; electrical conductors and cables; basic electrical construction drawings, residential electrical services, and electrical test equipment. Restricted to Community Colleges campuses only.

**Prerequisite(s):** BCT 123.

### **BCT 255. Special Topics**

#### **1-6 Credits (1-6)**

Topics to be announced in the Schedule of Classes . May be repeated up to 12 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.

### **BCT 290. Special Problems in Building Technology**

#### **1-4 Credits**

Individual studies in areas directly related to building technologies.

**Prerequisite:** consent of instructor.