



*Department of Teaching & Learning*  
*Parent/Student Course Information*

***Construction Technology***  
***(VO8515)***  
***Three Credits, One Year***  
***Grades 10 - 12***

*Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.*

**COURSE DESCRIPTION**

This exploratory program is an introductory component of the four main residential building trades: carpentry, electricity, masonry and plumbing. Students learn basic construction safety, skills and concepts in each trade and make an informed choice as to which area they would like to pursue as a career.

**CERTIFICATION**

None

**STUDENT ORGANIZATION**

SkillsUSA is a co-curricular organization for all students enrolled in trade and industrial education programs. SkillsUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. SkillsUSA helps students excel by providing educational programs, events and competitions that support career and technical education (CTE) in the nation's classrooms. Students are highly encouraged to participate.

**PREREQUISITE**

None

**OPTIONS FOR NEXT COURSE**

Carpentry  
Electricity  
Plumbing  
Masonry

**REQUIRED STUDENT TEXTBOOK**

None

## COMPETENCIES FOR CONSTRUCTION TECHNOLOGY

### **Demonstrating Workplace Readiness Skills: Personal Qualities and People Skills**

- 1 Demonstrate positive work ethic.
- 2 Demonstrate integrity.
- 3 Demonstrate teamwork skills.
- 4 Demonstrate self-representation skills.
- 5 Demonstrate diversity awareness.
- 6 Demonstrate conflict-resolution skills.
- 7 Demonstrate creativity and resourcefulness.

### **Demonstrating Workplace Readiness Skills: Professional Knowledge and Skills**

- 8 Demonstrate effective speaking and listening skills.
- 9 Demonstrate effective reading and writing skills.
- 10 Demonstrate critical-thinking and problem-solving skills.
- 11 Demonstrate healthy behaviors and safety skills.
- 12 Demonstrate an understanding of workplace organizations, systems and climates.
- 13 Demonstrate lifelong-learning skills.
- 14 Demonstrate job-acquisition and advancement skills.
- 15 Demonstrate time-, task- and resource-management skills.
- 16 Demonstrate job-specific mathematics skills.
- 17 Demonstrate customer-service skills.

### **Demonstrating Workplace Readiness Skills: Technology Knowledge and Skills**

- 18 Demonstrate proficiency with technologies common to a specific occupation.
- 19 Demonstrate information technology skills.
- 20 Demonstrate an understanding of Internet use and security issues.
- 21 Demonstrate telecommunications skills.

### **Examining All Aspects of an Industry**

- 22 Examine aspects of planning within an industry/organization.
- 23 Examine aspects of management within an industry/organization.
- 24 Examine aspects of financial responsibility within an industry/organization.
- 25 Examine technical and production skills required of workers within an industry/organization.
- 26 Examine principles of technology that underlie an industry/organization.
- 27 Examine labor issues related to an industry/organization.
- 28 Examine community issues related to an industry/organization.
- 29 Examine health, safety and environmental issues related to an industry/organization.

### **Addressing Elements of Student Life**

- 30 Identify the purposes and goals of the student organization.
- 31 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.
- 32 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs and projects.
- 33 Identify Internet safety issues and procedures for complying with acceptable use standards.

## **CORE CONSTRUCTION SKILLS**

### **Applying Basic Construction Safety Standards (Core Safety)**

- 34 Comply with federal, state and local safety requirements, including OSHA, VOSHA and EPA.
- 35 Identify personal protective equipment (PPE) requirements.

- 36 Inspect and maintain a safe working environment.
- 37 Explain safe working practices around electrical hazards.
- 38 Identify emergency first aid procedures.
- 39 Identify the types of fires and the methods used to extinguish them.
- 40 Inspect course-specific hand and power tools to visually identify defects.
- 41 Demonstrate lifting and carrying techniques.
- 42 Demonstrate safe laddering techniques.
- 43 Demonstrate safe scaffolding techniques.
- 44 Report personal injury, environmental and equipment safety violations to the appropriate authority.
- 45 Earn the OSHA 10 card.
- 46 Pass safety exams for shop/site safety and specific tool use.

### **Applying Fundamental Construction Skills**

- 47 Identify common construction hand and power tools.
- 48 Read a ruler.
- 49 Identify various pipe dimensions.
- 50 Add, subtract, multiply and divide whole numbers, with and without a calculator.
- 51 Add, subtract, multiply and divide fractions.
- 52 Add, subtract, multiply and divide decimals, with and without a calculator.
- 53 Convert decimals to percent and percent to decimals.
- 54 Convert fractions to decimals and decimals to fractions.
- 55 Identify units of length, weight, volume and temperature.
- 56 Identify the basic geometric formulas for shapes common to construction.
- 57 Identify basic blueprint terms, components and symbols.
- 58 Identify different classifications of drawings.

## **MASONRY**

### **Using Basic Masonry Skills**

- 59 Identify tools that are specific to masons.
- 60 Spread mortar.
- 61 Apply head joints.
- 62 Bond a brick wall to vertical joint uniformity.
- 63 Lay running bond wall to the line.
- 64 Gauge masonry wall with mason's scales.
- 65 Strike joints.
- 66 Build a rack-back lead.
- 67 Build a straight lead.
- 68 Build corners.
- 69 Build rectangular brick columns.
- 70 Identify types and sizes of brick.

### **Laying Brick Positions and Bonds**

- 71 Identify the six brick positions.
- 72 Lay an American/common bond pattern.
- 73 Lay an English bond pattern.
- 74 Lay a Flemish bond pattern.
- 75 Lay a stack bond pattern.
- 76 Lay a soldier course.
- 77 Lay a rowlock course.

## **Laying Concrete Masonry Units**

- 78 Apply head joints (block).
- 79 Lay out a block wall.
- 80 Lay block to the line.
- 81 Build a block jamb.
- 82 Build a block corner.
- 83 Gauge block walls.
- 84 Identify types and sizes of block.

## **Identifying and Mixing Masonry Cements**

- 85 Mix masonry cements.
- 86 Select masonry cement based on a specific job.

## **CARPENTRY**

### **Using Basic Carpentry Skills**

- 87 Identify tools that are specific to carpenters.
- 88 Check stock and/or assemblies for squareness.
- 89 Determine levelness and plumbness of surfaces.
- 90 Handle and store materials.
- 91 Identify materials.
- 92 Maintain hand tools.
- 93 Fasten stock with metal fasteners.
- 94 Cut and shape stock.

### **Framing a Floor**

- 95 Identify the sill plate.
- 96 Identify the floor joists and crown.
- 97 Identify bridging and blocking.
- 98 Identify subfloor sheathing.

### **Framing Walls**

- 99 Cut wall plates.
- 100 Identify studs, headers, jacks, rough sills and cripples.
- 101 Identify framing layout on wall plates.
- 102 Identify corner and tee posts.
- 103 Identify types of headers.
- 104 Identify types of door openings.
- 105 Identify types of window openings.
- 106 Identify metal stud framing procedures.
- 107 Identify types of exterior wall sheathing.

## **ELECTRICITY**

### **Applying Basics of Electricity**

- 108 Describe basic electrical theory.
- 109 Identify tools that are specific to electricians.
- 110 Identify basic electrical wiring devices.

### **Selecting and Installing Conductors**

- 111 Identify types of conductors.
- 112 Install conductors.
- 113 Make connections with lugs, connectors and terminals.

- 114 Select conductors for specific applications.
- 115 Install nail guards to protect conductors.

## **PLUMBING**

### **Performing Plumbing Basics, Cutting and Joining Pipe**

- 116 Identify tools that are specific to plumbers.
- 117 Cut and deburr copper tubing.
- 118 Cut plastic pipe with PVC/ABS saw or approved cutter.
- 119 Construct copper tubing assembly, using solder joints.
- 120 Calculate fitting allowance.
- 121 Join plastic pipe (i.e., tubing) to fittings, using solvent method.
- 122 Join PEX pipe (i.e., tubing), using crimp fittings.

### **Describing Water Recycling Systems**

- 123 Describe the process and functions of sewage treatment systems.
- 124 Describe the process and functions of water supply systems.

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