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ABSTRACT

This curriculum guide provides competency statements/objectives for an 11th- to 12th-grade trade and industrial education course in carpentry. The first half of the guide consists of competency statements for the 35 units of the curriculum. Each competency statement consists of a terminal objective and specific objectives for each unit, referenced to the core and supplementary curriculum and to a sequence reference number. Topics covered by the units include the free enterprise system, the nation's infrastructure system, starting a business, leadership development, job application, safety, basic carpentry mathematics, measurement, reading plans, lumber, tools, equipment, building layout, framing, footings and foundations, floors, walls, roofs, staircases, cornices and gable-ends, siding, windows, doors, insulation, wallboard, trim, cabinets, concrete, and metal studs. The second half of the guide consists of 35 competency goals for each skill/subject area, related to objectives and correlated with evaluation measures and references. A bibliography of references used in the competency lists is included in the guide. (KC)

# CARPENTRY

# COMPETENCY STATEMENTS/ OBJECTIVES AND REFERENCE GUIDE

Trade and Industrial Education
Division of Vocational Education Services
N. C. Department of Public Instruction
Raleigh, North Carolina 27603-1712

1989
REVISED

CARPENTRY OUTLINE

CARPENTRY OUTLINE

## STATE ADOPTED TEXTBOOKS

Goodheart-Willcox Company
MODERN CARPENTRY, Grades 9-12, Wagner, c. 1987

Glencoe Publishing
CARPENTRY AND BUILDING CONSTRUCTION, Grades 12-12, Feirer & Hutchings, c. 1986

Prentice-Hall
RESIDENTIAL CARPENTRY, Grades 10-12, Reed, c. 1987

## LIST OF COMPETENCY STATEMENTS

After completing the unit, the student will be able to:

001. Demonstrate how the free-enterprise system works.

002. Discuss the nation's infrastructure system.

003. Describe problems and expenses of starting a business.

004. Lead and participate at informal and formal meetings.

005. Demonstrate effective oral communication skills.

006. Demonstrate civic and social responsibility in given situations.

007. Demonstrate effective and efficient employability skills.

008. Identify general and personal safety rules, select proper fire extinguishers, match safety colors, explain the role of OSHA, and demonstrate knowledge of basic first-aid treatment for accident victims.

009. Solve basic math problems related to carpentry.

010. Accurately read rules and tapes to measure objects.

011. Read plans and read and use the architect's scale.

012. Identify common softwoods, hardwoods, plywoods, and also be able to compute lumber quantities and write a lumber requistion.

013. Identify hand tools and list rules for the care and safe use of hand tools.

014. Identify power tools used by carpenters, match the tools to their correct names, and demonstrate safe and proper use of various power tools.

015. Identify miscellaneous equipment used by carpenters and state and observe safety rules pertaining to such equipment. The student should also be able to set up a section of scaffold and use a bench grinder.

016. Use a builder's level and transit.

017. Erect batter boards, locate building lines, layout footings, square building lines, and set grade stakes.

018. Discuss residential construction and framing.

## LIST OF COMPETENCY STATEMENTS

After completing the unit, the student will be able to:

019. Discuss the use of concrete and reinforcing for footings and foundations, estimate concrete needed, and describe how to perform a slump test.

020. Construct forms for continous and pier footings.

021. Build and use edge forms.

022. Identify floor and sill framing members, estimate materials needed, and build floors and sills.

023. Identify wall and partition members, estimate materials, and frame a single story structure.

024. Identify different roof styles, discuss roof framing, and construct a roof, including all openings.

025. Identify special house designs and special framing projects. Student should also be able to construct a housed staircase.

026. Discuss cornice and gable-end construction and apply siding.

027. Discuss roof construction and apply roofing and flashing.

028. Install different types of wall sheathing and siding.

029. Identify different types of windows and install a double-hung wood window unit.

030. Identify types of exterior doors and install a pre-hung exterior door unit, and garage door frame and trim.

031. Discuss types of insulation and vapor barriers and install these materials.

032. Discuss gypsum wallboard and estimate and install wallboard.

033. Recognize and install different types of wall and ceiling materials using various methods.

034. Discuss and install interior doors and trim.

035. Identify parts of and install cabinets and shelves.

036. Identify various types of finish flooring and install underlayment.

## LIST OF COMPETENCY STATEMENTS

After completing the unit, the student will be able to:

037. Explain the purpose of forms and identify types of forms, parts of forms hardware used on forms.

038. Identify types of wall forms, materials used to construct wall forms, and the parts of a wall form.

039. Identify different types of column shapes and construct forms for a square column.

040. Identify different types of beam forms, and identify the parts of a beam form.

041. Layout walls and door jambs and install stud walls using fireproof metal studs.

# TRADE AND INDUSTRIAL EDUCATION
# CARPENTRY

| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | 7722 |
|---|---|---|---|
| **UNIT 001 FREE-ENTERPRISE SYSTEM**<br>TERMINAL OBJECTIVE - 001<br>After completing this unit, the student will be able to demonstrate how the free-enterprise system works.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Analyze characteristics of free-enterprise economy in local area. | C | X | |
| 2. Interpret a free-enterprise flow chart. | C | X | |
| 3. Interpret price influences in a free-enterprise economy. | C | X | |
| 4. Collect information on the role of government in a free-enterprise economy. | C | X | |
| 5. Analyze supply and demand. | C | X | |
| **UNIT 002 THE NATION'S INFRASTRUCTURE SYSTEM**<br>TERMINAL OBJECTIVE - 002<br>After completing this unit, the student will be able to discuss the nation's infrastructure system and its effect on the future of the construction industry.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Define infrastructure. | C | X | |
| 2. Name the classes of infrastructure. | C | X | |
| 3. Conduct a survey of specific infrastructure repair needs in your community. | C | X | |
| **UNIT 003 STARTING A BUSINESS**<br>TERMINAL OBJECTIVE - 003<br>After completing this unit, the student will be able to describe the expenses, problems, and his/her potential for starting a business.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Examine expenses involved in starting a business. | C | X | |
| 2. Explore problems faced by entrepreneurs in operating a business. | C | X | |
| 3. Evaluate own potential to start a business. | C | X | |

# TRADE AND INDUSTRIAL EDUCATION
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| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
|---|---|---|---|
| **UNIT 004 LEADERSHIP DEVELOPMENT**<br>**SUB-UNIT A - BUSINESS MEETINGS**<br>TERMINAL OBJECTIVE - 004<br>After completing this unit, the student will be able to lead and participate at informal and formal meetings.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. List the characteristics of a good leader. | C | X | |
| 2. List ways to demonstrate leadership. | C | X | |
| 3. Participate as a member during a club meeting. | C | X | |
| 4. Demonstrate knowledge of basic principles of parliamentary procedures. | C | X | X |
| 5. List the four classes of motions. | C | X | X |
| 6. Describe the steps for making and processing a motion. | C | X | X |
| 7. Describe the methods of voting. | C | X | X |
| 8. Describe the election process for club officers. | C | X | X |
| 9. Demonstrate the ability to chair a business meeting. | C | | X |
| 10. Serve on a club committee. | C | | X |
| **UNIT 004 LEADERSHIP DEVELOPMENT**<br>**SUB-UNIT B - SPEECH PREPARATION AND PRESENTATION**<br>TERMINAL OBJECTIVE - 005<br>After completing this unit, the student will be able to demonstrate effective oral communication skills.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Prepare an outline for a speech. | C | X | X |
| 2. Deliver a 3-5 minute prepared speech. | C | X | X |
| 3. Deliver a 1-2 minute extemporaneous speech. | C | X | X |
| 4. Evaluate a speech. | C | X | X |

# TRADE AND INDUSTRIAL EDUCATION
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| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
|---|---|---|---|
| **UNIT 004 LEADERSHIP DEVELOPMENT** | | | |
| **SUB-UNIT C - SOCIAL AND CIVIC INVOLVEMENT** | | | |
| TERMINAL OBJECTIVE - 006 | | | |
| After completing this unit, the student will be able to demonstrate civic and social responsibility in given situations. | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Demonstrate knowledge of proper dress for formal, semi-formal, and informal occasions. | C | X | X |
| 2. Demonstrate knowledge of proper table etiquette. | C | X | X |
| 3. Participate in a social activity. | C | X | X |
| 4. Participate in a community project. | C | X | X |
| **UNIT 004 LEADERSHIP DEVELOPMENT** | | | |
| **SUB-UNIT D - JOB APPLICATION AND INTERVIEWS** | | | |
| TERMINAL OBJECTIVE - 007 | | | |
| After completing this unit, the student will be able to demonstrate effective and efficient employability skills (getting and keeping a job). | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Describe how to make a favorable impression upon others. | C | X | |
| 2. Establish short-term career, personal, and educational goals. | C | X | X |
| 3. Determine future occupational goals. | C | X | X |
| 4. Use a trade journal and other professional sources for job information. | C | X | X |
| 5. Develop a personal resume'. | C | | X |
| 6. Complete a job application. | C | | X |
| 7. Participate in a job interview. | C | | X |

| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
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| **UNIT 005 GENERAL AND PERSONAL SAFETY** | | | |
| TERMINAL OBJECTIVE - 008 | | | |
| After completing this unit, the student will be able to identify general safety rules, personal safety rules, select the proper fire extinguisher for use on classes of fires, match safety colors with their use, explain the role of OSHA, and demonstrate knowledge of basic first-aid treatment for accident victims. This knowledge will be shown by completing assignment sheets and by scoring a minimum of 100 on all safety tests. | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Match safety and basic first-aid terms with their correct definitions. | C | X | X |
| 2. State general and personal safety rules. | C | X | X |
| 3. Select the correct extinguisher for the class of fire. | C | X | |
| 4. Match the colors of the safety color code to their correct applications. | C | X | |
| 5. Arrange in proper order the first-aid actions to follow in an emergency. | C | X | |
| 6. List carpentry related injuries that require first-aid treatment. | C | X | |
| 7. Perform first-aid treatment on simulated accident victims. | C | | X |
| 8. Demonstrate the proper way to lift a heavy object. | C | X | |

# TRADE AND INDUSTRIAL EDUCATION
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| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | 7722 |
|---|---|---|---|
| **UNIT 006 BASIC CARPENTRY MATH** | | | |
| TERMINAL OBJECTIVE - 009 | | | |
| After completing this unit, tne student will be able to solve basic math problems related to carpentry. | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Add and subtract whole numbers. | C | X | |
| 2. Multiply and divide whole numbers. | C | X | |
| 3. Identify types of fractions. | C | X | |
| 4. Reduce fractions to lowest terms. | C | X | |
| 5. Convert unlike fractions to like fractions. | C | X | |
| 6. Convert unlike and mixed fractions. | C | X | |
| 7. Add, subtract, and multiply fractions. | C | X | |
| 8. Add and subtract decimal numbers. | C | X | |
| 9. Multiply and divide decimal numbers. | C | X | |
| 10. Convert fractions and percentages. | C | X | |
| 11. Solve percentage problems. | C | X | |
| 12. Caloulate area and volume. | C | X | |
| 13. Estimate cubic yards. | C | X | |
| 14. Solve basic ratio and proportion problems. | C | X | |
| **UNIT 007 RULE AND TAPE MEASUREMENT** | | | |
| TERMINAL OBJECTIVE - 010 | | | |
| After completing this unit, the student should be able to accurately read rules and tapes to measure objects. | | | |
| SPECIFIC OBJCTIVES | | | |
| 1. Correctly identify terms used in measuring. | C | X | |
| 2. Identify measuring tools used by carpenters. | C | X | |
| 3. Read a carpenter's rule or tape to the nearest fraction of an inch. | C | X | |
| 4. Convert fractional inches to hundredths of a foot. | C | X | |
| 5. Read an engineer's rule. | C | X | |
| 6. Use basic measuring tools and the 3-4-5 method to lay out the perimeter of a building on a concrete slab. | C | X | |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 008 READING PLANS**<br>TERMINAL OBJECTIVE - 011<br>After completing this unit, the student will be able to read plans and read and use the architect's scale.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with plan reading to their definitions. | C | X | |
| 2. Identify types of drawings usually associated with a set of plans. | C | X | |
| 3. Match lines in the alphabet of lines to their correct uses. | C | X | |
| 4. Identify selected architectural symbols used to represent materials on plans. | C | X | |
| 5. Identify selected abbreviations commonly used on plans. | C | X | |
| 6. State the purposes of written specifications. | C | X | |
| 7. Read plans. | C | | X |
| 8. Interpret a finish schedule. | C | | X |
| 9. Read written specifications. | C | | X |
| 10. Use an architect's scale. | C | X | |
| **UNIT 009 LUMBER**<br>TERMINAL OBJECTIVE - 012<br>After completing this unit, the student will be able to identify common softwoods, hardwoods, and plywoods. The student should also be able to compute lumber quantities and write a lumber requisition.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Identify terms and definitions associated with lumber. | C | X | |
| 2. Select characteristics considered in using lumber. | C | X | |
| 3. Match common softwoods to their correct uses. | C | X | |
| 4. Match common hardwoods to their correct uses. | C | X | |
| 5. Identify common defects in lumber. | C | X | |
| 6. Match correct grades to softwood and hardwood lumber. | C | X | |
| 7. Identify veneers used in softwood plywoods by their correct letter designation. | C | X | |

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| **UNIT 009 LUMBER - SPECIFIC OBJECTIVES CONT.** | | | |
| 8. Match standard hardwood plywood grade to their correct descriptions. | C | X | |
| 9. Identify types of plywood core construction. | C | X | |
| 10. Compute lumber quantities using board feet, square feet, and lineal feet. | C | X | |
| 11. Write actual sizes for given nominal sizes of softwood lumber. | C | X | |
| 12. Identify types of trim and moldings. | C | X | |
| 13. Write a lumber requisition. | C | X | |
| | | | |
| | | | |
| **UNIT 010 HAND TOOLS**<br>TERMINAL OBJECTIVE - 013<br>After completion of this unit, the student will be able to identify hand tools and list rules for the care and safe use of hand tools.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with hand tools to their correct definitions. | C | X | |
| 2. State guidelines for care and safe use of hand tools. | C | X | |
| 3. Select from a list, hand tools a beginning carpenter needs. | C | X | |
| 4. Match types of hammers to their correct uses. | C | X | |
| 5. Match types of handsaws to their correct uses. | C | X | |
| 6. Match types of squares to their correct uses. | C | X | |
| 7. Match types of planes to their correct uses. | C | X | |
| 8. Match types of measuring instruments to their correct uses. | C | X | |
| 9. Identify types of layout instruments. | C | X | |
| 10. Identify types of boring and drilling tools. | C | X | |
| 11. Identify types of screwdrivers. | C | X | |
| 12. Match types of pliers to their correct uses. | C | X | |
| 13. Identify types of wrenches. | C | X | |
| 14. Identify types of chisels. | C | X | |
| 15. Identify types of clamps. | C | X | |
| | | | |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | 7722 |
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| **UNIT 010 HAND TOOLS - SPECIFIC OBJECTIVES CONT.** | | | |
| 16. Identify hand tools used to install drywall. | C | X | |
| 17. Match types of miscellaneous hand tools to their correct uses. | C | X | |
| 18. Demonstrate basic performance with each hand tool a beginning carpenter should have as given in number 3 above. | C | X | |
| **UNIT 011 POWER TOOLS**<br>TERMINAL OBJECTIVE - 014<br>After completion of this unit, the student will be able to identify power tools used by carpenters and match the tools to their correct names. The student should also be able to demonstrate safe and proper use of various power tools.<br>SPECIFIC OBJECTIVES | | | |
| 1. Match to their correct definitions terms associated with power tools. | C | X | |
| 2. State general safety rules pertaining to power tools. | C | X | |
| 3. Select from a list, general guidelines for proper care of power tools. | C | X | |
| 4. Complete a safety test for each of the following tools: | | | |
| a). Power plane or surfacer | C | X | |
| b). Jointer | C | X | |
| c). Table saw | C | X | |
| d). Band saw | C | X | |
| e). Radial arm saw | C | X | |
| f). Power miter box | C | X | |
| g). Wood shaper | C | X | |
| h). Drill press | C | X | |
| i). Portable circular saw | C | X | |
| j). Portable router | C | X | |
| k). Combination belt & disc sander | C | X | |
| l). Portable hand drill, sorewdriver, & hammer drill | C | X | |
| m). Portable sabre saw | C | X | |
| n). Reciprocating saw | C | X | |
| o). Bench grinder | C | X | |
| p). Portable belt & finish sanders | C | X | |
| q). Powder-actuated tool | S | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 011 POWER TOOLS - SPECIFIC OBJECTIVES CONT.** | | | |
| r). Pneumatic fasteners | S | X | |
| 5. Demonstrate the ability to safely and correctly operate the power tool to: | | | |
| a). Perform straight and angle cut-off operations. | C | X | |
| b). Perform ripping operations. | C | X | |
| c). Make miter and compound miter cuts. | C | X | |
| d). Operate a power sander. | C | X | |
| e). Drill and bore holes. | C | X | |
| f). Perform jointing operations. | C | X | |
| g). Perform surface planing operations. | C | X | |
| h). Perform edge planing operations. | C | X | |
| i). Safely load and use a powder-actuated tool. | S | X | |
| **UNIT 012 MISCELLANEOUS EQUIPMENT**<br>TERMINAL OBJECTIVE - 015<br>After completion of this unit, the student will be able to identify miscellaneous equipment used by carpenters and to state and observe safety rules pertaining to such equipment. The student should also be able to set up a section of scaffolding and use a bench grinder.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with miscellaneous equipment. | C | X | |
| 2. Identify miscellaneous equipment used by carpenters. | C | X | |
| 3. Identify the parts of a prefabricated rolling scaffold. | C | X | |
| 4. Identify equipment used for specific construction jobs. | C | X | |
| 5. State safety precautions pertaining to miscellaneous equipment. | C | X | |
| 6. Demonstrate the ability to set up a section of scaffolding. | C | X | |
| 7. Demonstrate the ability to use a bench grinder to dress and sharpen tools. | C | X | |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
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| **UNIT 013 BUILDER'S LEVEL**<br>TERMINAL OBJECTIVE - 016<br>After completion of this unit, the student will be able to use a builder's level and transit.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with leveling instruments. | C | X | |
| 2. List uses of a level. | C | X | |
| 3. Identify types of levels. | C | X | |
| 4. Identify parts of a builder's level. | C | X | |
| 5. Label major components of an engineer's level. | S | | X |
| 6. Identify hand signals used by the instrument person to guide the rod person. | C | X | |
| 7. Set up and adjust a builder's level. | C | X | |
| 8. Use a builder's level to check footing elevations. | C | X | |
| 9. Use a builder's level to perform differential leveling. | C | X | |
| 10. Connect plumb bob to transit. | C | X | |
| 11. Set up and adjust a combination level-transit. | C | X | |
| 12. Use a combination level-transit to locate building-line points on batter boards. | C | X | |
| **UNIT 014 BUILDING LAYOUT**<br>TERMINAL OBJECTIVE - 017<br>After completion of this unit, the student will be able to erect batter boards, locate building lines, lay out footings, square building lines, and set grade stakes.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with site layout. | C | X | |
| 2. Match to their correct definitions terms pertaining to grades and leveling instruments. | C | X | |
| 3. Name factors pertinent to site layout. | C | X | |
| 4. Select from a list information used to lay out building lines. | C | X | |
| 5. State the purpose of batter boards. | C | X | |
| 6. Describe common methods used to square building lines. | C | X | |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
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| **UNIT 014 BUILDING LAYOUT - Continued** | | | |
| 7. Write layout dimensions on a plot plan. | C | X | |
| 8. Erect batter boards and locate building lines for a structure. | C | X | |
| 9. Lay out footings for a structure. | C | X | |
| 10. Set grade stakes for footings without forms. | C | X | |
| **UNIT 015 FRAMING IDENTIFICATION**<br>TERMINAL OBJECTIVE - 018<br>After completion of this unit, the student will be able to discuss residential construction and framing.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definition terms associated with residential building. | C | X | |
| 2. Define framing. | C | X | |
| 3. Label the basic parts of a house. | C | X | |
| 4. Identify framing styles. | C | X | |
| 5. Identify phases in the logical sequence of construction for a one-story structure. | C | X | |
| **UNIT 016 FOOTINGS AND FOUNDATIONS**<br>TERMIINAL OBJECTIVE - 019<br>After completion of this unit, the student will be able to discuss the use of concrete and reinforcing for footings and foundations, estimate concrete amounts needed, and describe how to perform a slump test.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with concrete foundations to their correct definitions. | C | | X |
| 2. State factors that affect properties of concrete mixture. | C | | X |
| 3. Write the formula for estimating concrete. | C | | X |
| 4. Name types of reinforcing used in concrete. | C | | X |
| 5. Match common rebar numbers to their correct diameter sizes. | C | | X |
| 6. Label parts of a concrete foundation. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
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| **UNIT 016 FOOTINGS AND FOUNDATIONS - CONTINUED** | | | |
| 7. Arrange in proper sequence steps involved when constructing a concrete foundation. | C | | X |
| 8. Estimate the amount of concrete for a footing. | C | | X |
| 9. Estimate the amount of materials to pour a foundation. | C | | X |
| 10. Describe how a slump test is performed. | C | | X |
| **UNIT 017 FOOTING FORMS**<br>TERMINAL OBJECTIVE - 020<br>After completion of this unit, the student will be able to construct forms for continous and pier footings and prepare footing forms for erection in another location.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with footing and foundation forms. | C | | X |
| 2. Discuss external factors that affect form design. | C | | X |
| 3. Identify the parts of a form. | C | | X |
| 4. Name methods of form construction for footings. | C | | X |
| 5. Set forms for a continous footing. | S | | X |
| 6. Construct and set forms for a pier footing. | S | | X |
| 7. Strip pier-footing forms and prepare for erection at another location. | S | | X |
| **UNIT 018 EDGE FORMS**<br>TERMINAL OBJECTIVE - 021<br>After completion of this unit, the student will be able to build and use various types of edge forms.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with edge forms to their correct definitions. | C | | X |
| 2. Name types of pours using edge forms. | C | | X |
| 3. Name materials used for edge forms. | C | | X |
| 4. Identify parts of edge forms. | C | | X |
| 5. Match terms associated with joints to their correct definitions. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 018 EDGE FORMS - CONTINUED** | | | |
| 6. Name reasons for using joints in pavements. | C | | X |
| 7. Identify types of joints used in pavements. | C | | X |
| 8. List types of sealants used in joints. | C | | X |
| 9. Identify parts of a stair form. | C | | X |
| 10. State rules for unit rise and run. | C | | X |
| 11. Construct edge forms for a slab on grade with foundation. | S | | X |
| 12. Construct forms for a small set of stairs. | S | | X |
| **UNIT 019 FLOOR FRAMING**<br>TERMINAL OBJECTIVE - 022<br>After completion of this unit, the student will be able to identify floor and sill framing members and should be able to estimate materials and build floors and sills.<br>SPECIFIC OBJECTIVES | | | |
| 1. Match to their correct definitions terms associated with floor and sill framing. | C | X | |
| 2. Identify floor and sill framing and support members. | C | X | |
| 3. Name methods used to fasten sills to the foundation. | C | X | |
| 4. Select from a list types of girders | C | X | |
| 5. Determine proper girder size for safe use. | C | X | |
| 6. List types of joists. | C | X | |
| 7. Determine proper joist size for ordinary load conditions. | C | X | |
| 8. Identify types of bridging. | C | X | |
| 9. List types of subflooring materials. | C | X | |
| 10. Discuss functional designs used to lay subflooring. | C | X | |
| 11. List the purposes of subflooring. | C | X | |
| 12. Match fasteners used in floor framing to their correct uses. | C | X | |
| 13. Estimate the amount of material needed to frame a floor and sill and to lay a subfloor. | C | X | |
| 14. Build a box sill, install floor joists, and frame an opening. | C | | X |
| 15. Install bridging. | C | | X |
| 16. Lay diagonal and right-angle subfloors. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 020 WALL FRAMING**<br>TERMINAL OBJECTIVE - 023<br>After completion of this unit, the student will be able to identify wall and partition members, estimate materials, and frame a single story structure.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with wall and ceiling framing to their correct definitions. | C | X | |
| 2. Identify framing members use in wall and partition framing. | C | X | |
| 3. Complete drawings of common methods used to construct outside corners of wall frames. | C | X | |
| 4. Complete drawings of common methods used to construct partition Tees. | C | X | |
| 5. Label types of headers. | C | X | |
| 6. Compute the length of a regular stud. | C | X | |
| 7. Calculate rough opening dimensions for windows. | C | X | |
| 8. Compute the length of trimmers for window and door openings. | C | X | |
| 9. Compute the length of headers for rough openings. | C | X | |
| 10. Select from a list construction details that should be added during wall framing. | C | X | |
| 11. List methods used to brace walls. | C | X | |
| 12. Select from a list pennyweights of nails most often used in framing. | C | X | |
| 13. Estimate the amount of materials for wall and partition framing. | C | X | |
| 14. Layout wall and partition locations on floor. | C | | X |
| 15. Cut studs, trimmers, cripples, and headers to length. | C | | X |
| 16. Build corners, tees, and headers. | C | | X |
| 17. Construct wall sections for a single-story structure. | C | | X |
| 18. Lay out and install ceiling joists. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 021 ROOF FRAMING**<br>TERMINAL OBJECTIVE - 024<br>After completion of this unit, the student will be able to identify different roof styles and discuss roof framing. The student should also be able to construct a roof including all openings and sheathing.<br>SPECIFIC OBJECTIVES | | | |
| 1. Match to their correct definitions terms associated with roof framing. | C | X | |
| 2. Identify roof styles. | C | X | |
| 3. Identify roof framing members. | C | X | |
| 4. Label roof framing units. | C | X | |
| 5. Discuss slope and pitch ratios. | C | X | |
| 6. Identify the parts of a rafter. | C | X | |
| 7. List methods for determining rafter length. | C | X | |
| 8. Use a framing square to compute the length of a common rafter. | C | X | |
| 9. Use a framing square to compute the length of a hip rafter. | C | X | |
| 10. Use a framing square to compute the length of jack rafters. | C | X | |
| 11. Match to their correct definitions terms associated with trusses. | C | X | |
| 12. Identify the main parts of a truss. | C | X | |
| 13. Identify types of trusses. | C | X | |
| 14. Identify hardware used in truss construction. | C | X | |
| 15. List types of vents used in roof construction. | C | X | |
| 16. Estimate material needed to frame a roof. | C | X | |
| 17. Lay out rafter locations on the top plate and ridgeboard on 2-foot centers. | C | | X |
| 18. Lay out, cut, and erect rafters. | C | | X |
| 19. Frame a gable end with vent opening. | C | | X |
| 20. Construct an opening for a chimney. | C | | X |
| 21. Apply roof sheathing. | C | | X |
| 22. Erect trusses on a gable roof. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 022 SPECIAL FRAMING & STAIRCA' 'S**<br>TERMINAL OBJECTIVE - 025<br>After completion of this unit, the student will be able to identify types of special house designs and special framing projects. The student should also be able to construct a housed staircase.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with special framing. | C | | X |
| 2. Identify the types of special house designs. | C | | X |
| 3. Identify special framing projects. | C | | X |
| 4. Match to their correct definitions terms associated with stairs. | C | | X |
| 5. Identify the parts of a staircase. | C | | X |
| 6. Identify the basic types of stairs. | C | | X |
| 7. List factors that you must consider when building a staircase. | C | | X |
| 8. State rules of thumb for unit rise and run. | C | | X |
| 8. Calculate number and size of risers and treads for a stair of given dimensions. | C | | X |
| 10. Estimate material for housed stairs. | C | | X |
| 11. Label methods used to secure stringers. | C | | X |
| 12. Demonstrate the ability to construct a housed stair. | C | | X |
| **UNIT 023 CORNICES & GABLE-ENDS**<br>TERMINAL OBJECTIVE - 026<br>After completion of this unit, the student will be able to discuss cornice and gable-end construction, build a box cornice, and apply siding to a gable-end.<br>SPECIFIC OBJECTIVES | | | |
| 1. Match to their correct definitions terms associated with cornices and gable-ends. | C | | X |
| 2. Label types of cornice designs. | C | | X |
| 3. Identify parts of a boxed cornice. | C | | X |
| 4. Identify parts of a boxed rake section. | C | | X |
| 5. Identify types of cornice molding. | C | | X |
| 6. Label types of tail-rafter cuts. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 023 CORNICE & GABLE-ENDS - CONTINUED** | | | |
| 7. Select from a list materials used for soffits. | C | | X |
| 8. Select from a list hardware and fasteners used on or with cornices. | C | | X |
| 9. Name exterior wall coverings used on gable-ends. | C | | X |
| 10. Estimate material needed for cornices and gable-ends. | C | | X |
| 11. Build a horizontal box cornice. | C | | X |
| 12. Apply siding to a gable-end. | C | | X |
| **UNIT 024 ROOFING & FLASHING**<br>TERMINAL OBJECTIVE - 027<br>After completion of this unit, the student will be able to discuss roof construction and apply roofing and flashing.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with roofing to their correct definitions. | C | X | |
| 2. State safety rules pertaining to roofing. | C | X | |
| 3. Identify the parts of a roof. | C | X | |
| 4. Identify traditional residential roof designs. | C | X | |
| 5. Name classes of roofing. | C | X | |
| 6. List types of roofing materials. | C | X | |
| 7. Identify basic types of asphalt shingles. | C | X | |
| 8. List guidelines for applying underlayment. | C | X | |
| 9. Describe general requirements for applying flashing. | C | X | |
| 10. Select from a list areas where flashing should be used. | C | X | |
| 11. Select from a list types of materials used for flashing. | C | X | |
| 12. Match roofing equipment and tools to their correct uses. | C | X | |
| 13. Select from a list guidelines for applying double starter course of asphalt shingles. | C | X | |
| 14. State guidelines for applying shingles with cutouts that break joint in half. | C | X | |
| 15. Estimate roofing materials needed for a three-tab asphalt shingle roof. | C | | X |
| 16. Apply saturate-felt underlayment and asphalt shingles with 5-inch exposure. | C | | X |

| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
|---|---|---|---|
| **UNIT 025 WALL SHEATHING AND SIDING**<br>TERMINAL OBJECTIVE - 023<br>After completion of this unit, the student will be able to identify and install different types of wall sheathing and siding.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with exterior wall finishes and trim. | C | | X |
| 2. Name types of wall sheathing. | C | | X |
| 3. Match types of wall coverings to their correct categories. | C | | X |
| 4. Identify styles of siding. | C | | X |
| 5. Identify joint details for plywood siding. | C | | X |
| 6. Identify types of exterior moldings and trims. | C | | X |
| 7. Identify types of vinyl and aluminum sidings. | C | | X |
| 8. Match the correct terms with the moldings used with vinyl and aluminum sidings. | C | | X |
| 9. List recommendations for waterproofing exterior walls | C | | X |
| 10. Estimate siding for a house with a gable roof. | C | | X |
| 11. Install sheathing. | C | | X |
| 12. Install wood and vinyl sidings. | C | | X |
| **UNIT 026 WINDOWS**<br>TERMINAL OBJECTIVE - 029<br>After completion of this unit, the student will be able to identify different types of windows and install a double-hung window unit.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match windows and accessories to their correct descriptions. | C | | X |
| 2. Name types of sliding windows. | C | | X |
| 3. Name type of swinging windows. | C | | X |
| 4. Name types of fixed windows. | C | | X |
| 5. Select from a list types of materials used to construct windows. | C | | X |

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| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
|---|---|---|---|
| **UNIT 026 WINDOWS - CONTINUED** | | | |
| 6. Identify parts of a window installation. | C | | X |
| 7. Select from a list types of materials used for windowpanes. | C | | X |
| 8. State information a carpenter should know when installing windows. | C | | X |
| 9. State recommendations for a good window installation. | C | | X |
| 10. Demonstrate the ability to install a double-hung wood window unit. | C | | X |
| **UNIT 027 EXTERIOR DOORS** | | | |
| TERMINAL OBJECTIVE - 030 | | | |
| After completion of this unit, the student will be able to identify types of exterior doors and install a prehung exterior door unit and garage door frame and trim. | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with exterior doors to their correct definitions. | C | | X |
| 2. State basic classifications of exterior doors. | C | | X |
| 3. Identify types of entry doors. | C | | X |
| 4. Identify parts of an exterior door installation. | C | | X |
| 5. Select from a list standard sizes of exterior doors. | C | | X |
| 6. Explain the numbering system for doors. | C | | X |
| 7. Identify door swing (hand). | C | | X |
| 8. Identify hardware used with exterior doors. | C | | X |
| 9. Demonstrate the ability to correctly install an exterior prehung door unit. | C | | X |
| 10. Demonstrate the ability to correctly install the frame and the inside jambs for an overhead garage door. | S | | X |

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|---|---|---|---|
| **UNIT 028 INSULATION AND VAPOR BARRIERS**<br>TERMINAL OBJECTIVE - 031<br>After completion of this unit, the student will be able to discuss types of insulation and vapor barriers and to install these materials.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with insulation to their correct definitions. | C | | X |
| 2. Explain the functions of the two basic kinds of insulation. | C | | X |
| 3. Select from a list benefits of using insulation in a structure. | C | | X |
| 4. List types of insulation commonly used in residential construction. | C | | X |
| 5. Name general classifications of insulation materials. | C | | X |
| 6. List areas where insulation should be used in residential construction. | C | | X |
| 7. List factors that determine the amount of insulation needed for walls, ceilings, and floors. | C | | X |
| 8. Name types of materials used for vapor barriers. | C | | X |
| 9. Select from a list methods used to apply insulation and vapor barriers. | C | | X |
| 10. Estimate the packages of insulation needed to insulate a structure. | C | | X |
| 11. Install blanket insulation in walls. | C | | X |
| **UNIT 029 GYPSUM WALLBOARD**<br>TERMINAL OBJECTIVE - 032<br>After completion of this unit, the student will be able to discuss gypsum wallboard and estimate and install wallboard materials.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with drywall to their correct definitons. | C | | X |
| 2. Name types of gypsum wallboard. | C | | X |
| 3. Select from a list standard sizes of gypsum wallboard. | C | | X |
| 4. Identify standard edge shapes of gypsum wallboard. | C | | X |
| 5. State benefits of using gypsum wallboard. | C | | X |

| COMPETENCY STATEMENT | CORE SUPP. | SEQUENCE 7721 | SEQUENCE 7722 |
|---|---|---|---|
| **UNIT 029 GYPSUM WALLBOARD - CONTINUED** | | | |
| 6. Describe types of base or construction where gypsum wallboard is used. | C | | X |
| 7. Identify hardware and fasteners that may be applied to gypsum wallboard. | C | | X |
| 8. Select from a list types of finishes that may be applied to gypsum wallboard. | C | | X |
| 9. Estimate materials needed to drywall a structure. | C | | X |
| 10. Install gypsum wallboard. | C | | X |
| 11. Finish wallboard joints and depressions. | C | | X |
| **UNIT 030 WALL AND CEILING FINISHES**<br>TERMINAL OBJECTIVE - 033<br>After completion of this unit, the student will be able to recognize the different types of wall and ceiling finish materials and be able to install various types of materials using various installation methods.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with wall and ceiling finishes. | C | | X |
| 2. List materials used to finish walls and ceilings. | C | | X |
| 3. Name styles of paneling. | C | | X |
| 4. Identify joint treatments for paneling. | C | | X |
| 5. Estimate the number of 4' x 8' sheets needed to panel a room. | C | | X |
| 6. List materials used to fabricate ceiling tile. | C | | X |
| 7. List factors that influence type of ceiling tile to be used. | C | | X |
| 8. Estimate the number of ceiling tiles needed to finish a ceiling. | C | | X |
| **UNIT 031 INTERIOR DOORS & TRIM**<br>TERMINAL OBJECTIVE - 034<br>After completion of this unit, the student will be able to discuss interior door installations and be able to install various types of door units, locks, and trim.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to : | | | |
| 1. Match terms associated with interior doors and trim to their correct definitions. | C | | X |

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| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
|---|---|---|---|
| **UNIT 031 INTERIOR DOORS AND TRIM - CONTINUED** | | | |
| 2. State the general types of interior door construction. | C | | X |
| 3. State the basic classifications of interior doors. | C | | X |
| 4. Identify types of interior doors. | C | | X |
| 5. Identify parts of an interior door unit. | C | | X |
| 6. Select from a list standard sizes of interior doors and jambs. | C | | X |
| 7. Identify hand (swing) of door. | C | | X |
| 8. Select form a list recommended finish clearances and dimensions for hanging doors. | C | | X |
| 9. Compute rough opening size for interior doors. | C | | X |
| 10. Identify types of interior trim. | C | | X |
| 11. Estimate material needed to trim a room. | C | | X |
| 12. Demonstrate the ability to properly install a split-jamb prehung door unit. | C | | X |
| **UNIT 032 CABINETS AND SPECIAL BUILT-INS**<br>TERMINAL OBJECTIVE - 035<br>After completion of this unit, the student will be able to identify parts of a cabinet and should be able to install cabinets and shelves.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with cabinet installation and special built-ins to their correct definitions. | C | | X |
| 2. Name types of cabinets. | C | | X |
| 3. Identify parts of a cabinet. | C | | X |
| 4. Name the standard sizes of base and top cabinets. | C | | X |
| 5. Label types of cabinet-door installation. | C | | X |
| 6. Label styles of cabinet doors. | C | | X |
| 7. Label types of joints used in cabinet construction. | C | | X |
| 8. Identify hardware used on cabinets. | C | | X |
| 9. List types of materials used on counter tops. | C | | X |
| 10. List types of special built-ins. | C | | X |
| 11. Demonstrate the ability to correctly install a custom-built cabinet. | C | | X |
| | | | |

| COMPETENCY STATEMENT | Core Supp. | Sequence 7721 | Sequence 7722 |
|---|---|---|---|
| **UNIT 033 FINISH FLOORING AND UNDERLAYMENT**<br>TERMINAL OBJECTIVE - 036<br>After completion of this unit, the student will be able to identify various types of finish flooring and be able to install underlayment.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with floor finishes. | C | | X |
| 2. Name types of underlayment for finish flooring. | C | | X |
| 3. Estimate the number of 4' x 8' sheets of underlayment needed to floor a room. | C | | X |
| 4. Demonstrate the ability to properly install underlayment. | C | | X |
| **UNIT 034 COMMERCIAL CONCRETE FORMS**<br>**SUB-UNIT A - INTRODUCTION TO FORMING**<br>TERMINAL OBJECTIVE - 037<br>After completion of this unit, the student will be able to explain the purpose of forms and identify types of forms, parts of forms, and hardware used on forms.<br>SPECIFIC OBJECTIVES | | | |
| 1. Explain the purpose of forms. | C | | X |
| 2. Name types of forms. | C | | X |
| 3. Identify parts of a form. | C | | X |
| 4. Name types of hardware used on forms. | C | | X |
| 5. Explain how to make a slump test. | S | | X |

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|---|---|---|---|
| **UNIT 034 COMMERCIAL CONCRETE FORMS**<br>**SUB-UNIT B - WALL FORMS**<br>TERMINAL OBJECTIVE - 038<br>After completion of this unit, the student will be able to identify types of wall forms, materials used to construct wall forms, and the part of a wall form.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Name types of wall forms. | C | | X |
| 2. Select from a list types of materials used to construct wall forms. | C | | X |
| 3. Identify parts of a wall form. | C | | X |
| 4. Demonstrate the ability to correctly construct panel forms. | C | | X |
| **UNIT 034 COMMERCIAL CONCRETE FORMS**<br>**SUB-UNIT C - COLUMN FORMS**<br>TERMINAL OBJECTIVE - 039<br>After completion of this unit, the student will be able to identify different types of column shapes and be able to construct forms for a square column.<br>SPECIFIC OBJECTIVES<br>After completion of this unit, the student will be able to: | | | |
| 1. Match to their correct definitions terms associated with vertical piers and columns. | C | | X |
| 2. Identify column shapes. | C | | X |
| 3. Name common types of materials used for column forms. | C | | X |
| 4. Demonstrate the ability to construct forms for a square column. | C | | X |

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|---|---|---|---|
| **UNIT 034 COMMERCIAL CONCRETE FORMS** | | | |
| **SUB-UNIT D - BEAM FORMS** | | | |
| TERMINAL OBJECTIVE - 040 | | | |
| After completion of this unit, the student will be able to identify different types of beam forms and identify the parts of a beam form. | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Identify the parts of a beam form. | C | | X |
| 2. Name types of beams. | C | | X |
| 3. List types of materials used to construct beam forms. | C | | X |
| **UNIT 035 METAL STUDS** | | | |
| TERMINAL OBJECTIVE - 041 | | | |
| After completion of this unit, the student will be able to layout walls and door jambs and should be able to install stud walls and door jambs using fireproof metal studs. | | | |
| SPECIFIC OBJECTIVES | | | |
| After completion of this unit, the student will be able to: | | | |
| 1. Match terms associated with firepeoof metal construction to their correct definitions. | C | | X |
| 2. Name components of metal stud systems. | C | | X |
| 3. Identify fasteners used for metal stud construction. | C | | X |
| 4. Identify tools and equipment used in metal stud construction. | C | | X |
| 5. List where metal stud systems are used. | C | | X |
| 6. Select from a list advantages of metal stud systems. | C | | X |
| 7. Demonstrate the ability to layout wall lines, corners, partitions, and openings. | C | | X |
| 8. Demonstrate the ability to correctly install a metal stud wall. | C | | X |

VOCATIONAL EDUCATION
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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 001 FREE-ENTERPRISE SYSTEM FC-1-A -- 60-A

COMPETENCY GOAL 001: After completing this unit the student will be able to demonstrate how the free-enterprise system works.

| Objectives | | Measures/Reference |
|---|---|---|
| 001.1 | Analyze characteristics of free-enterprise economy in local area. | FC-27-A -- 31-A |
| 001.2 | Interpret a free-enterprise flow chart. | FC-33-A -- 34-A |
| 001.3 | Interpret price influences in a free-enterprise economy. | FC-35-A -- 36-A |
| 001.4 | Collect information on the role of government in a free-enterprise economy. | FC-37-A -- 41-A |
| 001.5 | Analyze supply and demand. | FC-43-A -- 47-A |

VOCATIONAL EDUCATION
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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 002 THE NATION'S INFRASTRUCTURE SYSTEM FC-61-A -- 79-A

COMPETENCY GOAL 002: After completing this unit the student will be able to discuss the nation's infrastructure system and its effect on the future of the construction industry.

| Objectives | | Measures/Reference |
|---|---|---|
| 002.1 | Define infrastructure. | FC-69-A |
| 002.2 | Name classes of infrastructure. | FC-69-A |
| 002.3 | Conduct a survey of specific infrastructure repair needs in your community. | FC-73-A |

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UNIT 003 STARTING A BUSINESS FC-81-A -- 153-A

COMPETENCY GOAL 003: After completing this unit the student will be able to describe the expenses, problems and his or her potential for starting a business.

| Objectives | | Measures/Reference |
|---|---|---|
| 003.1 | Examine expenses involved in starting a business. | FC-105-A -- 116-A |
| 003.2 | Explore problems faced by entrepreneurs in operating a business. | FC-137-A -- 142-A |
| 003.3 | Evaluate own potential to start a business. | FC-143-A -- 148-A |

VOCATIONAL EDUCATION
TRADE AND INDUSTRIAL EDUCATION

Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 004 LEADERSHIP DEVELOPMENT FC-155-A -- 201-A
ROBERT'S RULES OF ORDER
VICA: LEARN, GROW, BECOME

SUB-UNIT A - BUSINESS MEETINGS

COMPETENCY GOAL 004: After completing this unit the student will be able to lead and participate at informal and formal meetings.

| Objectives | | Measures/Reference |
|---|---|---|
| 004.1 | List the characteristics of a good leader. | V-177-A |
| 004.2 | List ways to demonstrate leadership. | V-177-A -- 178-A |
| 004.3 | Participate as a member during a club meeting. | RR |
| 004.4 | Demonstrate knowledge of basic principles of parliamentary procedures. | RR |
| 004.5 | List the four classes of motions. | RR |
| 004.6 | Describe the steps for making and processing a motion. | V-125-A -- 127-A |
| 004.7 | Describe the methods of voting. | V-127-A |
| 004.8 | Describe the election process for club officers. | V-67-A |
| 004.9 | Demonstrate the ability to chair a business meeting. | V-122-A |
| 004.10 | Serve on a club committee. | V-67-A -- 68-A |

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UNIT 004 LEADERSHIP DEVELOPMENT FC-155-A -- 201-A
ROBERT'S RULES OF ORDER
VICA: LEARN, GROW, BECOME

SUB-UNIT B - SPEECH PREPARATION AND PRESENTATION

COMPETENCY GOAL 005: After completing this unit the student will be able to demonstrate effective oral communication skills.

| Objectives | | Measures/Reference |
|---|---|---|
| 005.1 | Prepare an outline for a speech. | V-227-A |
| 005.2 | Deliver a 3-5 minute prepared speech. | V-225-A -- 228-A |
| 005.3 | Deliver a 1-2 minute extemporaneous speech. | V-225-A -- 228-A |
| 005.4 | Evaluate a speech | V-229-A -- 231-A |

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UNIT 004 LEADERSHIP DEVELOPMENT

FC-155-A -- 201-A
ROBERT'S RULES OF ORDER
VICA: LEARN, GROW, BECOME

SUB-UNIT C - SOCIAL AND CIVIC INVOLVEMENT

COMPETENCY GOAL 006: After completing this unit the student will demonstrate civic and social responsibility in given situations.

| Objectives | | Measures/Reference |
|---|---|---|
| 006.1 | Demonstrate knowledge of proper dress for formal, semi-formal, and informal occasions. | |
| 006.2 | Demonstrate knowledge of proper table etiquette. | V-179-A |
| 006.3 | Participate in a social activity. | |
| 006.4 | Participate in a community project. | |

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UNIT 004 LEADERSHIP DEVELOPMENT FC-155-A -- 201-A
ROBERT'S RULES OF ORDER
VICA: LEARN, GROW, BECOME

SUB-UNIT D - JOB APPLICATION AND INTERVIEWS

COMPETENCY GOAL 007. After completing this unit the student will be able to demonstrate effective and efficient employability skills (getting and keeping a job).

| Objectives | | Measures/Reference |
|---|---|---|
| 007.1 | Describe how to make a favorable impression upon others. | V-179-A |
| 007.2 | Establish short-term career, personal, and educational goals. | |
| 007.3 | Determine future occupational options. | |
| 007.4 | Use a trade journal and other professional sources for job information. | |
| 007.5 | Develop a personal resume'. | FC-167-A -- 169-A<br>V-317-A -- 319-A |
| 007.6 | Complete a job application. | FC-171-A -- 178-A<br>V-325-A -- 328-A |
| 007.7 | Participate in a job interview. | FC-181-A -- 183-A<br>V-329-A -- 330-A |

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UNIT 005 GENERAL AND PERSONAL SAFETY FC-203-A -- 303-A

COMPETENCY GOAL 008: After completing this unit, the student will be able to identify general safety rules, personal safety rules, select the proper fire extinguisher for use on classes of fires, match safety colors with their use, explain the role of OSHA, and demonstrate knowledge of basic first-aid treatment for accident victims. This knowledge will be shown by completing assignment sheets and by scoring a minimum of 100 on all safety tests.

| Objectives | | Measures/Reference |
|---|---|---|
| 008.1 | Match safety and basic first-aid terms with their correct definitions. | FC-249-A -- 250-A |
| 008.2 | State general and personal job safety rules. | FC-250-A -- 252-A |
| 008.3 | Select the correct extinguisher for the class of fire. | FC-253-A -- 254-A<br>FC-265-A |
| 008.4 | Match the colors of the safety color code to their correct applications. | FC-252-A -- 253-A |
| 008.5 | Arrange in proper order the first-aid actions to follow in an emergency. | FC-254-A |
| 008.6 | List carpentry related injuries that require first-aid treatment. | FC-255-A |
| 008.7 | Perform first-aid treatment on simulated accident victims. | FC-267-A -- 270-A |
| 008.8 | Demonstrate the proper way to lift a heavy object. | FC-245-A |

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UNIT 006 BASIC CARPENTRY MATH FC-1-B -- 155-B

COMPETENCY GOAL 009: After completing this unit the student will be able to solve basic math problems related to carpentry.

| Objectives | | Measures/Reference |
|---|---|---|
| 009.1 | Add & subtract whole numbers. | FC-34-B -- 35-B |
| 009.2 | Multiply & divide whole numbers. | FC-35-B -- 38-B |
| 009.3 | Identify types of fractions. | FC-39-B |
| 009.4 | Reduce fractions to lowest terms. | FC-39-B |
| 009.5 | Convert mixed numbers to improper fractions. | FC-39-B |
| 009.6 | Convert improper fractions to mixed numbers. | FC-40-B |
| 009.7 | Add, subtract, and multiply fractions. | FC-40-B -- 44-B |
| 009.8 | Add & subtract decimal numbers. | FC-45-B -- 46-B |
| 009.9 | Multiply & divide decimal numbers. | FC-46-B -- 48-B |
| 009.10 | Convert fractions and percentages. | FC-48-B -- 50-B |
| 009.11 | Solve percentage problems. | FC-50-B |
| 009.12 | Calculate area & volume. | FC-51-B -- 60-B |
| 009.13 | Estimate cubic yards. | FC-123-B |
| 009.14 | Solve basic ratio and proportion problems. | FC-125-B |

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UNIT 007 RULE AND TAPE MEASUREMENT FC-157-B -- 228-B

COMPETENCY GOAL 010: After completing this unit the student should be able to accurately read rules and tapes to measure objects.

| Objectives | | Measures/Reference |
|---|---|---|
| 010.1 | Correctly identify terms used in measuring. | FC-181-B |
| 010.2 | Identify measuring tools used by carpenters. | FC-182-B -- 184-B |
| 010.3 | Read a carpenter's rule or tape to the nearest fraction of an inch. | FC-185-B -- 187-B |
| 010.4 | Convert fractional inches to hundredths of a foot. | FC-187-B -- 189-B |
| 010.5 | Read an engineer's rule. | FC-190-B -- 192-B |
| 010.6 | Use basic measuring tools and the 3-4-5 method to lay out the perimeter of a building on a concrete slab. | FC-195-B<br>211-B -- 215-B |

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UNIT 008 READING PLANS FC-229-B -- 338-B

COMPETENCY GOAL 011: After completing this unit the student will be able to read plans and read and use the architect's scale.

| Objectives | | Measures/Reference |
|---|---|---|
| 011.1 | Match terms associated with plan reading to their definitions. | FC-257-B -- 260-B |
| 011.2 | Identify types of drawings usually associated with a set of plans. | FC-261-B -- 262-B |
| 011.3 | Match lines in the alphabet of lines to their correct uses. | FC-264-B -- 265-B |
| 011.4 | Identify selected architectural symbols used to represent materials on plans. | FC-266-B -- 267-B |
| 011.5 | Identify selected abbreviations commonly used on plans. | FC-270-B -- 271-B |
| 011.6 | State the purposes of written specifications. | FC-274-B |
| 011.7 | Read plans. | FC-303-B -- 306-B |
| 011.8 | Interpret a finish schedule. | FC-307-B |
| 011.9 | Read written specifications. | FC-309-B -- 312-B |
| 011.10 | Use an architect's scale. | FC-313-B -- 316-B |

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UNIT 009 LUMBER FC-339-B -- 395-B

COMPETENCY GOAL 012: After completing this unit the student will be able to identify common softwoods, hardwoods, plywoods. The student should also be able to compute lumber quantities and write a lumber requisition.

| Objectives | | Measures/Reference |
|---|---|---|
| 012.1 | Identify terms and definitions associated with lumber. | FC-353-B |
| 012.2 | Select characteristics considered in using lumber. | FC-354-B -- 355-B |
| 012.3 | Match common softwoods to their correct uses. | FC-355-B -- 356-B |
| 012.4 | Match common hardwoods to their correct uses. | FC-356-B -- 357-B |
| 012.5 | Identify common defects in lumber. | FC-357-B -- 359-B |
| 012.6 | Match correct grades to softwood and hardwood lumber. | FC-360-B -- 361-B |
| 012.7 | Identify veneers used in softwood plywoods by their correct letter designation. | FC-361-B |
| 012.8 | Match standard hardwood plywood grades to their correct descriptions. | FC-362-B |
| 012.9 | Identify types of plywood core construction. | FC-363-B |
| 012.10 | Compute lumber quantities using board feet, square feet, and lineal feet. | FC-369-B -- 370-B |
| 012.11 | Write actual sizes for given nominal sizes of softwood lumber. | FC-363-B -- 364-B |
| 012.12 | Identify types of trim and moldings. | FC-365-B -- 368-B |
| 012.13 | Write a lumber requistion. | FC-370-B -- 371-B |

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UNIT 010 HAND TOOLS FC-1-C -- 85-C

COMPETENCY GOAL 013: After completion of this unit student will be able to identify hand tools and list rules for the care and safe use of hand tools.

| Objectives | | Measures/Reference |
|---|---|---|
| 013.1 | Match terms associated with hand tools to their correct definitions. | FC-17-C |
| 013.2 | State guidelines for care and safe use of hand tools. | FC-17-C |
| 013.3 | Select from a list hand tools a beginning carpenter needs. | FC-18-C |
| 013.4 | Match types of hammers to their correct uses. | FC-18-C -- 19-C |
| 013.5 | Match types of handsaws to their correct uses. | FC-20-C -- 22-C |
| 013.6 | Match types of squares to their correct uses. | FC-23-C -- 25-C |
| 013.7 | Match types of planes to their correct uses. | FC-25-C -- 27-C |
| 013.8 | Match types of measuring instruments to their correct uses. | FC-27-C |
| 013.9 | Identify types of layout instruments. | FC-28-C -- 30-C |
| 013.10 | Identify types of boring and drilling hand tools. | FC-30 C -- 32-C |
| 013.11 | Identify types of screwdrivers. | FC-32-C -- 35-C |
| 013.12 | Match types of pliers to their correct uses. | FC-35-C -- 36-C |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 010 HAND TOOLS - Continued FC-1-C -- 85-C

COMPETENCY GOAL 013: After completion of this unit student will be able to identify hand tools and list rules for the care and safe use of hand tools.

| Objectives | | Measures/Reference |
|---|---|---|
| 013.13 | Identify types of wrenches. | FC-37-C -- 38-C |
| 013.14 | Identify types of chisels. | FC-41-C -- 42-C |
| 013.15 | Identify types of clamps. | FC-42-C -- 44-C |
| 013.16 | Identify hand tools used to install drywall. | FC-45-C -- 47-C |
| 013.17 | Match types of miscellaneous hand tools to their correct uses. | FC-48-C -- 51-C |
| 013.18 | Demonstrate basic performance with each hand tool a beginning carpenter should have as given in 013.3 above. | |

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UNIT 011 POWER TOOLS FC-87-C -- 206-C

COMPETENCY GOAL 014: After completion of this unit student will be able to identify power tools used by carpenters and match the tools to their correct names. The student should also be able to demonstrate safe and proper use of various power tools.

| Objectives | | Measures/Reference |
|---|---|---|
| 014.1 | Match to their correct definitions terms associated with power tools. | FC-103-C |
| 014.2 | State general safety rules pertaining to power tools. | FC-103-C -- 104-C |
| 014.3 | Select from a list general guidelines for proper care of power tools. | FC-104-C -- 105-C |
| 014.4 | Complete a safety test for each of the following tools: | |
| | a. Power plane or surfacer | FC-109-C |
| | b. Jointer | FC-108-C |
| | c. Table saw | FC-105-C |
| | d. Band saw | FC-111-C |
| | e. Radial arm saw | FC-107-C |
| | f. Power miter box | FC-114-C |
| | g. Wood shaper | FC-109-C |
| | h. Drill press | FC-112-C |
| | i. Portable circular saw | FC-118-C |
| | j. Portable router | FC-120-C |
| | k. Portable sander | FC-113-C |
| | l. Portable hand drill | FC-122-C |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 011 POWER TOOLS - Continued FC-87-C -- 206-C

COMPETENCY GOAL 014: After completion of this unit student will be able to identify power tools used by carpenters and match the tools to their correct names. The student should also be able to demonstrate safe and proper use of various power tools.

| Objectives | | Measures/Reference |
|---|---|---|
| 014.4 | m. Portable sabre saw | FC-119-C |
| | n. Reciprocating saw | FC-119-C |
| | o. Bench grinder | FC-111-C |
| | p. Portable belt & finish sanders | FC-116-C |
| | q. Powder-actuated tool | FC-127-C |
| | r. Pneumatic fasteners | FC-126-C |
| 014.5 | Demonstrate the ability to safely and correctly operate the correct power tool: | |
| | a. Perform straight and angle cut-off operations. | FC-139-C -- 147-C |
| | b. Perform ripping operations. | FC-149-C -- 153-C |
| | c. Make miter and compound miter cuts. | FC-155-C -- 162-C |
| | d. Operate a power sander. | FC-163-C -- 164-C |
| | e. Drill and bore holes. | FC-165-C -- 167-C |
| | f. Perform jointing operations. | FC-169-C -- 172-C |
| | g. Perform face-planing operations. | FC-173-C -- 174-C |
| | h. perform edge-planing operations. | FC-175-C -- 176-C |
| | i. Safely load and use a powder-actuated tool. | FC-179-C -- 183-C |

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UNIT 012 MISCELLANEOUS EQUIPMENT FC-207-C -- 284-C

COMPETENCY GOAL 015: After completion of this unit student will be able to identify miscellaneous equipment used by carpenters and to state and observe safety rules pertaining to such equipment. The student should also be able to set up a section of scaffolding and use a bench grinder.

| Objectives | | Measures/Reference |
|---|---|---|
| 015.1 | Match to their correct definitions terms associated with miscellaneous equipment. | FC-221-C |
| 015.2 | Identify miscellaneous equipment used by carpenters. | FC-222-C -- 232-C |
| 015.3 | Identify the parts of a prefabricated rolling scaffold. | FC-233-C |
| 015.4 | Identify equipment used for specific construction jobs. | FC-234-C -- 235-C |
| 015.5 | State safety precautions pertaining to miscellaneous equipment. | FC-236 C -- 237-C |
| 015.6 | Demonstrate the ability to set up a section of scaffolding. | FC-253-C -- 254-C |
| 015.7 | Demonstrate the ability to use a bench grinder to dress and sharpen tools. | FC-257-C -- 263-C |

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UNIT 013 BUILDER'S LEVEL FC-1-D -- 83-D

COMPETENCY GOAL 016: After completion of this unit student will be able to use a builder's level and transit.

| Objectives | | Measures/Reference |
|---|---|---|
| 016.1 | Match to their correct definitions terms associated with leveling instruments. | FC-13-D -- 14-D |
| 016.2 | List use of a level. | FC-15-D |
| 016.3 | Identify types of levels. | FC-15-D -- 16-D |
| 016.4 | Identify parts of a builder's level. | FC-17-D |
| 016.5 | Label major components of an engineer's transit. | FC-19-D -- 21-D |
| 016.6 | Identify hand signals used by the instrument person to guide the rod person. | FC-25-D -- 27-D |
| 016.7 | Set up and adjust a builder's level. | FC-37-D -- 41-D |
| 016.8 | Use a builder's level to check footing elevations. | FC-43-D -- 44-D |
| 016.9 | Use a builder's level to perform differential leveling. | FC-45-D -- 49-D |
| 016.10 | Connect plumb bob to transit. | FC-51-D -- 53-D |
| 016.11 | Set up and adjust a combination level-transit. | FC-55-D -- 59-D |
| 016.12 | Use a combination level-transit to locate building line points on batter boards. | FC-61-D -- 66-D |

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UNIT 014 BUILDING LAYOUT FC-85-D -- 131-D

COMPETENCY GOAL 017: After completion of this unit student will be able to erect batter boards, locate building lines, lay out footings, square building lines, and set grade stakes.

| Objectives | | Measures/Reference |
|---|---|---|
| 017.1 | Match to their correct definitions terms associated with site layout. | FC-93-D -- 94-D |
| 017.2 | Match to their correct definitions terms pertaining to grades and leveling instruments. | FC-94-D -- 95-D |
| 017.3 | Name factors pertinent to site layout. | FC-95-D |
| 017.4 | Select from a list information used to lay out building lines. | FC-95-D -- 96-D |
| 017.5 | State the purpose of batter boards. | FC-96-D |
| 017.6 | Describe common methods used to square building lines. | FC-97-D -- 98-D |
| 017.7 | Write layout dimensions on a plot plan. | FC-99-D -- 101-D |
| 017.8 | Erect batter boards and locate building lines for a structure. | FC-111-D -- 119-D |
| 017.9 | Lay out footings for a structure. | FC-121-D -- 124-D |
| 017.10 | Set grade stakes for footings without forms. | FC-125-D |

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UNIT 015 FRAMING IDENTIFICATION RC-1-A -- 41-A

COMPETENCY GOAL 018: After completion of this unit student will be able to discuss residential construction and framing.

| Objectives | | Measures/Reference |
|---|---|---|
| 018.1 | Match to their correct definition terms associated with residential construction. | RC-11-A -- 12-A |
| 018.2 | Define framing. | RC-12-A |
| 018.3 | Label the basic parts of a house. | RC-13-A |
| 018.4 | Identify framing styles. | RC-15-A -- 21-A |
| 018.5 | Identify phases in the logical sequence of construction for a one-story structure. | RC-23-A -- 24-A |

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UNIT 016 FOOTINGS AND FOUNDATIONS RC-1 B 112-B

COMPETENCY GOAL 019: After completion of this unit student will be able to discuss the use of concrete and reinforcing for footings and foundations, estimate concrete amounts needed, and describe how to perform a slump test.

| Objectives | | Measures/Reference |
|---|---|---|
| 019.1 | Match terms associated with concrete foundations to their correct definitions. | RC-21-B |
| 019.2 | State factors that affect properties of concrete mixture. | RC-22-B |
| 019.3 | Write the formula for estimating concrete. | RC-24-B |
| 019.4 | Name types of reinforcing used in concrete. | RC-24-B |
| 019.5 | Match common rebar numbers to their correct ameter sizes. | RC-24-B |
| 019.6 | Label parts of a concrete foundation. | RC-25-B |
| 019.7 | Arrange in proper sequence steps involved when constructing a concrete foundation. | RC-30-B |
| 019.8 | Estimate the amount of concrete for a footing. | RC-31-B |
| 019.9 | Estimate the amount of materials to pour a foundation. | RC-33 B |
| 019.10 | Describe how a slump test is performed. | RC 37 B 40 B |

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UNIT 017 FOOTING FORMS RC-1-C -- 54-C

COMPETENCY GOAL 020: After completion of this unit student will be able to construct forms for continuous and pier footings and prepare footing forms for erection in another location.

| Objectives | | Measures/Reference |
|---|---|---|
| 020.1 | Match to their correct definitions terms associated with footing and foundation forms. | RC-11-C |
| 020.2 | Discuss external factors that affect form design. | RC-11-C -- 12-C |
| 020.3 | Identify the parts of a form. | RC-12-C -- 17-C |
| 020.4 | Name methods of form construction for footings. | RC-17-C |
| 020.5 | Set forms for a continous footing. | RC-19-C -- 32-C |
| 020.6 | Construct and set forms for a pier footing. | RC-33-C -- 44-C |
| 020.7 | Strip pier-footing forms and prepare for erection at another location. | RC-45-C -- 46-C |

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UNIT 018 EDGE FORMS RC-55-C -- 142-C

COMPETENCY GOAL 021: After completion of this unit student will be able to build and use various types of edge forms.

| Objectives | | Measures/Reference |
|---|---|---|
| 021.1 | Match terms associated with edge forms to their correct definitions. | RC-83-C |
| 021.2 | Name types of pours using edge forms. | RC-83-C |
| 021.3 | Name materials used for edge forms. | RC-83-C |
| 021.4 | Identify parts of edge forms. | RC-84-C -- 85-C |
| 021.5 | Match terms associated with joints to their correct definitions. | RC-85-C -- 86-C |
| 021.6 | Name reasons for using joints in pavements. | RC-86-C |
| 021.7 | Identify types of joints used in pavements. | RC-86-C -- 88-C |
| 021.8 | List types of sealants used in joints. | RC-88-C |
| 021.9 | Identify parts of a stair form. | RC-91-C |
| 021.10 | State rules for unit rise and run. | RC-97-C |
| 021.11 | Construct edge forms for a slab on grade with foundation. | RC-99-C -- 103-C |
| 021.12 | Construct forms for a small set of stairs. | RC-115-C -- 118-C |

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UNIT 019 FLOOR FRAMING RC-1-D -- 66-D

COMPETENCY GOAL 022: After completion of this unit student will be able to identify floor and sill framing members and should be able to estimate materials and build floors and sills.

| Objectives | | Measures/Reference |
|---|---|---|
| 022.1 | Match to their correct definitions terms associated with floor and sill framing. | RC-11-D |
| 022.2 | Identify floor and sill framing and support members. | RC-12-D |
| 022.3 | Name methods used to fasten sills to the foundation. | RC-12-D -- 14-D |
| 022.4 | Select from a list types of girders. | RC-14-D |
| 022.5 | Determine proper girder size for sale use. | RC-14 D -- 16-D<br>RC-25-D -- 26-D |
| 022.6 | List types of joists. | RC-17-D |
| 022.7 | Determine proper joist size for ordinary load conditions. | RC-17-D -- 18-D<br>RC-27-D -- 28-D |
| 022.8 | Identify types of bridging. | RC-18-D -- 19-D |
| 022.9 | List types of subflooring materials. | RC-19-D |
| 022.10 | Discuss functional designs used to lay subflooring. | RC-20-D |
| 022.11 | List the purposes of subflooring. | RC-21-D |
| 022.12 | Match fasteners used in floor framing to their correct uses. | RC-21-D |

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UNIT 019 FLOOR FRAMING - Continued RC-1-D -- 66-D

COMPETENCY GOAL 022: After completion of this unit student will be able to identify floor and sill framing members and should be able to estimate materials and build floors and sills.

| Objectives | | Measures/Reference |
|---|---|---|
| 022.13 | Estimate the amount of material needed to frame a floor and sill and to lay a subfloor. | RC-21-D<br>RC-29-D |
| 022.14 | Build a box sill, install floor joists, and frame an opening. | RC-33-D -- 40-D |
| 022.15 | Install bridging. | RC-41-D -- 43-D |
| 022.16 | Lay diagonal and right-angle subfloors. | RC-45-D -- 49-D |

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UNIT 020 WALL FRAMING RC-67-D -- 162-D

COMPETENCY GOAL 023: After completion of this unit student will be able to identify wall and partition members, estimate materials, and frame a single story structure.

| Objectives | | Measures/Reference |
|---|---|---|
| 023.1 | Match terms associated with wall and ceiling framing to their correct definitions. | RC-91-D |
| 023.2 | Identify framing members used in wall and partition framing. | RC-92-D |
| 023.3 | Complete drawings of common methods used to construct outside corners of wall frames. | RC-93-D |
| 023.4 | Complete drawings of common methods used to construct partition Tees. | RC-94-D -- 96-D |
| 023.5 | Label types of headers. | RC-95-D -- 97-D |
| 023.6 | Compute the length of a regular stud. | RC-97-D -- 99-D |
| 023.7 | Calculate rough opening dimensions for windows and doors. | RC-100-D -- 101-D<br>RC-107-D -- 108-D |
| 023.8 | Compute the length of trimmers for window and door openings. | RC-102-D |
| 023.9 | Compute the length of header for rough openings. | RC-103-D -- 104 D |
| 023.10 | Select from a list construction details that should be added during wall framing. | RC-104-D |
| 023.11 | List methods used to brace walls. | RC 104 D -- 105-D |

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UNIT 020 WALL FRAMING - Continued RC-67-D - 162-D

COMPETENCY GOAL 023: After completion of this unit student will be able to identify wall and partition members, estimate materials, and frame a single story structure.

| Objectives | | Measures/Reference |
|---|---|---|
| 023.12 | Select from a list pennyweights of nails most often used in framing. | RC-105-D |
| 023.13 | Estimate the amount of materials for wall and partition framing. | RC-105-D -- 106-D<br>RC-109-D -- 111-D |
| 023.14 | Layout wall and partition locations on floor. | RC-115-D -- 117-D |
| 023.15 | Cut studs, trimmers, cripples, and headers to length. | RC-119-D -- 122-D |
| 023.16 | Build corners, tees, and headers. | RC-123-D -- 127-D |
| 023.17 | Construct wall sections for a single-story structure. | RC-129-D -- 139-D |
| 023.18 | Layout and install ceiling joists. | RC-141-D -- 147-D |

VOCATIONAL EDUCATION
TRADE AND INDUSTRIAL EDUCATION

Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 021 ROOF FRAMING RC-163-D -- 268-D

COMPETENCY GOAL 024: After completion of this unit student will be able to identify different roof styles and discuss roof framing. The student should also be able to construct a roof, including all openings and sheathing.

| Objectives | | Measures/Reference |
|---|---|---|
| 024.1 | Match to their correct definitions terms associated with roof framing. | RC-189-D |
| 024.2 | Identify roof styles. | RC-190-D -- 191-D |
| 024.3 | Identify roof framing members. | RC-193-D |
| 024.4 | Label roof framing units. | RC-195-D |
| 024.5 | Discuss slope and pitch ratios. | RC-195-D |
| 024.6 | Identify the parts of a rafter. | RC-196-D |
| 024.7 | List methods for determining rafter length. | RC-196-D |
| 024.8 | Use a framing square to compute the length of a common rafter. | RC-196-D -- 198-D |
| 024.9 | Use a framing square to compute the length of a hip rafter. | RC-198-D -- 199-D |
| 024.10 | Use a framing square to compute the length of jack rafters. | RC-200-D -- 201-D |
| 024.11 | Match to their correct definitions terms associated with trusses. | RC-201 D -- 202-D |
| 024.12 | Identify the main parts of a truss. | RC-202-D |
| 024.13 | Identify types of trusses. | RC-202-D -- 205-D |
| 024.14 | Identify hardware used in truss construction. | RC-205-D -- 207-D |

VOCATIONAL EDUCATION
TRADE AND INDUSTRIAL EDUCATION

Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 021 ROOF FRAMING - Continued RC-163 D -- 268-D

COMPETENCY GOAL 024: After completion of this unit student will be able to identify different roof styles and discuss roof framing. The student should also be able to construct a roof, including all openings and sheathing.

| Objectives | | Measures/Reference |
|---|---|---|
| 024.15 | List types of vents used in roof construction. | RC-207-D -- 208-D |
| 024.16 | Estimate material needed to frame a roof. | RC-209-D -- 210-D<br>RC-213-D -- 214-D |
| 024.17 | Layout rafter locations on the top plate and ridgeboard on 2-foot centers. | RC-217-D -- 220 D |
| 024.18 | Layout, cut, and erect rafters. | RC-221-D -- 241-D |
| 024.19 | Frame a gable end with vent opening. | RC-243-D -- 244-D |
| 024.20 | Construct an opening for a chimney. | RC-245-D -- 246-D |
| 024.21 | Apply roof sheathing. | RC-247-D -- 248-D |
| 024.22 | Erect trusses on a gable roof. | RC-249-D -- 253-D |

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TRADE AND INDUSTRIAL EDUCATION

Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 022 SPECIAL FRAMING AND STAIRCASES RC-269-D -- 336-D

COMPETENCY GOAL 025: After completion of this unit student will be able to identify types of special house designs and special framing projects. The student should also be able to construct a housed staircase.

| Objectives | | Measures/Reference |
|---|---|---|
| 025.1 | Match to their correct definitions terms associated with special framing. | RC-285-D |
| 025.2 | Identify the types of special house designs. | RC-285-D -- 290-D |
| 025.3 | Identify special framing projects. | RC-290-D -- 296-D |
| 025.4 | Match to their correct definitions terms associated with stairs. | RC-297-D |
| 025.5 | Identify the parts of a staircase. | RC-298-D |
| 025.6 | Identify the basic types of stairs. | RC-299-D -- 300-D |
| 025.7 | List factors that you must consider when building a staircase. | RC-300-D -- 301-D |
| 025.8 | State rules of thumb for unit rise and unit run. | RC 301-D |
| 025.9 | Calculate number and size of risers and treads for a stair of given dimensions. | RC-301-D -- 302-D |
| 025.10 | Estimate material for housed stairs. | RC-302-D -- 305-D<br>RC-309-D |
| 025.11 | Label methods used to secure stringers. | RC-305-D -- 306-D |
| 025.12 | Demonstrate the ability to construct a housed stair. | RC-313-D -- 318-D |

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Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 023 CORNICES AND GABLE-ENDS RC-1-E -- 64 E

COMPETENCY GOAL 026: After completion of this unit student will be able to discuss cornice and gable-end construction, build a box cornice, and apply siding to a gable end.

| Objectives | | Measures/Reference |
|---|---|---|
| 026.1 | Match to their correct definitions terms associated with cornices and gable ends. | RC-19-E |
| 026.2 | Label types of cornice designs. | RC-20-E -- 22-E |
| 026.3 | Identify parts of a boxed cornice. | RC-23-E -- 24-E |
| 026.4 | Identify parts of a boxed rake section. | RC-24-E |
| 026.5 | Identify types of cornice molding. | RC-25-E -- 26-E |
| 026.6 | Label types of tail-rafter cuts. | RC-26-E -- 28-E |
| 026.7 | Select from a list materials used for soffits. | RC-28-E |
| 026.8 | Select from a list hardware and fasteners used on or with cornices. | RC-28-E -- 29-E |
| 026.9 | Name exterior wall coverings used on gable ends. | RC-29-E |
| 026.10 | Estimate material needed for cornices and gable ends. | RC-29-E -- 30-E<br>RC-31-E -- 33-E |
| 026.11 | Build a horizontal box cornice. | RC-37-E -- 45-E |
| 026.12 | Apply siding to a gable end. | RC-47-E -- 50-E |

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Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 024 ROOFING AND FLASHING RC-65-E -- 170-E

COMPETENCY GOAL 027: After completion of this unit student will be able to discuss roof construction and apply roofing and flashing.

| Objectives | | Measures/Reference |
|---|---|---|
| 027.1 | Match terms associated with roofing to their correct definitions. | RC-115-E |
| 027.2 | State safety rules pertaining to roofing. | RC-115-E -- 116-E |
| 027.3 | Identify the parts of a roof. | RC-117-E |
| 027.4 | Identify traditional residential roof designs. | RC-118-E -- 120-E |
| 027.5 | Name classes of roofing. | RC-121-E |
| 027.6 | List types of roofing materials. | RC-121-E |
| 027.7 | Identify basic types of asphalt shingles. | RC-122-E |
| 027.8 | List guidelines for applying underlayment. | RC-126-E |
| 027.9 | Describe general requirements for applying flashing. | RC-126-E |
| 027.10 | Select from a list areas where flashing should be used. | RC-126-E -- 127-E |
| 027.11 | Select from a list types of materials used for flashing. | RC-127-E |
| 027.12 | Match roofing equipment and tools to their correct uses. | RC-127-E -- 128-E |
| 027.13 | Select from a list guidelines for applying double starter course of asphalt shingles. | RC-128-E |

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Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 024 ROOFING AND FLASHING - Continued RC-65-E -- 170-E

COMPETENCY GOAL 027: After completion of this unit student will be able to discuss roof construction and apply roofing and flashing.

| Objectives | | Measures/Reference |
|---|---|---|
| 027.14 | State guidelines for applying shingles with cutouts that break joint in half. | RC-128-E - 130-E |
| 027.15 | Estimate roofing materials needed for a three-tab asphalt shingle roof. | RC-131-E -- 134 E<br>RC-135-E |
| 027.16 | Apply saturate-felt underlayment and asphalt shingles with 5-inch exposure. | RC-141-E -- 146-E |

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Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 025 WALL SHEATHING AND SIDING RC-171-E -- 234-E

COMPETENCY GOAL 028: After completion of this unit student will be able to identify and install different types of wall sheathing and siding.

| Objectives | | Measures/Reference |
|---|---|---|
| 028.1 | Match to their correct definitions terms associated with exterior wall finishes and trim. | RC-189-E |
| 028.2 | Name types of wall sheathing. | RC-189-E -- 190-E |
| 028.3 | Match types of wall coverings to their correct categories. | RC-190-E -- 191-E |
| 028.4 | Identify styles of siding. | RC-191-E - 193-E |
| 028.5 | Identify joint details for plywood siding. | RC-193-E -- 194-E |
| 028.6 | Identify types of exterior moldings and trims. | RC-195-E - 197-E |
| 028.7 | Identify types of vinyl and aluminum sidings. | |
| 028.8 | Match the correct terms with the moldings used with vinyl and aluminum sidings. | |
| 028.9 | List recommendations for waterproofing exterior walls. | RC-197-E |
| 028.10 | Estimate siding for a house with a gable roof. | RC-197-E -- 199-E<br>RC-201-E |
| 028.11 | Install sheathing. | RC-207-E -- 210-E |
| 028.12 | Install wood & vinyl sidings. | RC-211-E -- 215-E |

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Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 026 WINDOWS RC-235-E - 262-E

COMPETENCY GOAL 029: After completion of this unit student will be able to identify different types of windows and install a double-hung window unit.

| Objectives | | Measures/Reference |
|---|---|---|
| 029.1 | Match windows and accessories to their correct descriptions | RC-247-E -- 251-E |
| 029.2 | Name types of sliding windows. | RC-251-E |
| 029.3 | Name types of swinging windows. | RC-251-E |
| 029.4 | Name types of fixed windows. | RC-251-E |
| 029.5 | Select from a list types of materials used to construct windows. | RC-251-E |
| 029.6 | Identify parts of a window installation. | RC-252-E |
| 029.7 | Select from a list types of materials used for windowpanes. | RC-253-E |
| 029.8 | State information a carpenter should know when installing windows. | RC-253-E |
| 029.9 | State recommendations for a good window installation. | RC-254-E |
| 029.10 | Demonstrate the ability to install a double-hung wood window unit | RC-255-E -- 256-E |

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TRADE AND INDUSTRIAL EDUCATION

Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 027 EXTERIOR DOORS RC-263-E -- 318-E

COMPETENCY GOAL 030: After completion of this unit student will be able to identify types of exterior doors and install a prehung exterior door unit and garage door frame and trim.

| Objectives | | Measures/Reference |
|---|---|---|
| 030.1 | Match terms associated with exterior doors to their correct definitions. | RC-277-E 278-E |
| 030.2 | State basic classifications of exterior doors. | RC-278-E |
| 030.3 | Identify types of entry doors. | RC-278-E -- 280-E |
| 030.4 | Identify parts of an exterior door installation. | RC-281-E |
| 030.5 | Select from a list standard sizes of exterior doors. | RC-283-E |
| 030.6 | Explain the numbering system for doors. | RC-283-E |
| 030.7 | Identify door swing (hand). | RC-284-E -- 285-E |
| 030.8 | Identify hardware used with exterior doors. | RC-285-E -- 286-E |
| 030.9 | Demonstrate the ability to correctly install an exterior prehung door unit. | RC-295-E - 296-E |
| 030.10 | Demonstrate the ability to correctly install the frame and and inside jambs for an overhead garage door. | RC-305-E -- 307-E |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 028 INSULATION AND VAPOR BARRIERS RC-1-F -- 46-F

COMPETENCY GOAL 031: After completion of this unit student will be able to discuss types of insulation and vapor barriers and to install these materials

| Objectives | | Measures/Reference |
|---|---|---|
| 031.1 | Match terms associated with insulation to their correct definitions. | RC-23-F |
| 031.2 | Explain the functions of the two basic kinds of insulation. | RC-23-F |
| 031.3 | Select from a list benefits of using insulation in a structure. | RC-23-F |
| 031.4 | List types of insulation commonly used in residential construction. | RC-24-F -- 26-F |
| 031.5 | Name general classifications of insulation materials. | RC-26-F |
| 031.6 | List areas where insulation should be used in residential construction. | RC-26-F |
| 031.7 | List factors that determine the amount of insulation needed for walls, ceilings, and floors. | RC-27-F |
| 031.8 | Name types of materials used for vapor barriers. | RC-27-F |
| 031.9 | Select from a list methods used to apply insulation and vapor barriers. | RC-27-F -- 28-F |
| 031.10 | Estimate the packages of insulation needed to insulate a structure. | RC-28-F -- 31-F |
| 031.11 | Install blanket insulation in walls. | RC-39-F -- 40-F |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 029 GYPSUM WALLBOARD RC-47-F -- 128-F

COMPETENCY GOAL 032: After completion of this unit student will be able to discuss gypsum wallboard and estimate and install wallboard materials.

| Objectives | | Measures/Reference |
|---|---|---|
| 032.1 | Match terms associated with drywall to their correct definitions. | RC-83-F |
| 032.2 | Name types of gypsum wallboard. | RC-83-F -- 84-F |
| 032.3 | Select from a list standard sizes of gypsum wallboard. | RC-84-F -- 85-F |
| 032.4 | Identify standard edge shapes of gypsum wallboard. | RC-85-F -- 86-F |
| 032.5 | State benefits of using gypsum wallboard. | RC-86-F |
| 032.6 | Describe types of base or construction where wallboard is used. | RC-86-F |
| 032.7 | Identify hardware and fasteners that may be applied to gypsum wallboard. | RC-87-F -- 89-F |
| 032.8 | Select from a list types of finishes that may be applied to gypsum wallboard. | RC-89-F |
| 032.9 | Estimate materials needed to drywall a structure. | RC-89-F -- 92-F<br>RC-93-F -- 102-F |
| 032.10 | Install gypsum wallboard. | RC-105-F - 111-F |
| 032.11 | Finish wallboard joints and depressions. | RC-113-F -- 114-F |

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UNIT 030 WALL AND CEILING FINISHES RC-129-F 170-F

COMPETENCY GOAL 033: After completion of this unit student will be able to recognize the different types of wall and ceiling finish materials and be able to install various types of materials using various installation methods.

| Objectives | | Measures/Reference |
|---|---|---|
| 033.1 | Match to their correct definitions terms associated with wall and ceiling finishes. | RC-137-F |
| 033.2 | List materials used to finish walls and ceilings. | RC-137-F -- 138-F |
| 033.3 | Name styles of paneling. | RC-138-F |
| 033.4 | Identify joint treatments for paneling. | RC-139-F -- 140-F |
| 033.5 | Estimate the number of 4' x 8' sheets needed to panel a room. | RC-140-F -- 141-F |
| 033.6 | List materials used to fabricate ceiling tile. | RC-141-F |
| 033.7 | List factors that influence type of ceiling tile to be used. | RC-141-F |
| 033.8 | Estimate the number of ceiling tiles needed to finish a ceiling. | RC-142-F |

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Grade Level: 11 12 Skills/Subject Area Carpentry

UNIT 031 INTERIOR DOORS AND TRIM RC-171-F -- 249-F

COMPETENCY GOAL 034: After completion of this unit student will be able to discuss interior door installations and be able to install various types of door units, locks, and trim.

| Objectives | | Measures/Reference |
|---|---|---|
| 034.1 | Match terms associated with interior doors and trim to their correct definitions. | RC-181-F |
| 034.2 | State the general types of interior door construction. | RC-182-F |
| 034.3 | State the basic classifications of interior doors. | RC-182-F |
| 034.4 | Identify types of interior doors. | RC-183-F -- 184-F |
| 034.5 | Identify parts of an interior door unit. | RC-185-F |
| 034.6 | Select from a list standard sizes of interior doors and jambs. | RC-186-F |
| 034.7 | Identify hand of a door. | RC-187-F |
| 034.8 | Select from a list recommended finish clearances and dimensions for hanging doors. | RC-187-F -- 188-F |
| 034.9 | Compute rough opening size for interior doors. | RC-188-F -- 189-F<br>RC-199-F |
| 034.10 | Identify types of interior trim. | RC-192-F -- 196-F |
| 034.11 | Estimate material needed to trim a room. | RC-197-F<br>RC-201-F -- 203-F |
| 034.12 | Demonstrate the ability to correctly install a split jamb prehung door unit. | RC-215-F -- 219-F |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 032 CABINETS AND SPECIAL BUILT-INS RC-251-F -- 292-F

COMPETENCY GOAL 035: After completion of this unit student will be able to identify parts of a cabinet and should be able to install cabinets and shelves.

| Objectives | | Measures/Reference |
|---|---|---|
| 035.1 | Match terms associated with cabinet installation and special built-ins to their correct definitions. | RC-263-F |
| 035.2 | Name types of cabinets. | RC-263-F |
| 035.3 | Identify parts of a cabinet. | RC-264-F |
| 035.4 | Name the standard sizes of base and top cabinets. | RC-265-F |
| 035.5 | Label types of cabinet-door installation. | RC-265-F -- 266-F |
| 035.6 | Label styles of cabinet doors. | RC-266-F -- 267-F |
| 035.7 | Label types of joints used in cabinet construction. | RC-267-F -- 268-F |
| 035.8 | Identify hardware used on cabinets. | RC-269-F -- 272-F |
| 035.9 | List types of material used on counter tops. | RC-272-F |
| 035.10 | List types of special built-ins | RC-272-F |
| 035.11 | Demonstrate the ability to correctly install a custom-built cabinet. | RC-273-F -- 276-F |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 033 FINISH FLOORING AND UNDERLAYMENT RC-293-F -- 334-F

COMPETENCY GOAL 036: After completion of this unit student will be able to identify various types of finish flooring and be able to install underlayment.

| Objectives | | Measures/Reference |
|---|---|---|
| 036.1 | Match to their correct definitions terms associated with floor finishes. | RC-303-F |
| 036.2 | Name types of underlayment for finish flooring. | RC-303-F |
| 036.3 | Estimate the number of 4' x 8' sheets of underlayment needed to floor a room. | RC-303-F -- 304-F |
| 036.4 | Demonstrate the ability to install underlayment. | RC-309-F -- 310-F |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 034 COMMERCIAL CONCRETE FORMS CC-1-A -- 593-A

SUB-UNIT A -- INTRODUCTION TO FORMING CC-1-A -- 70-A

COMPETENCY GOAL 037: After completion of this unit student will be able to explain the purpose of forms and identify types of forms, parts of forms, and hardware used on forms.

| Objectives | | Measures/Reference |
|---|---|---|
| 037.1 | Explain the purpose of forms. | CC-47-A |
| 037.2 | Name types of forms. | CC-47-A -- 48-A |
| 037.3 | Identify parts of a form. | CC-49-A |
| 037.4 | Name types of hardware used on forms. | CC-50-A -- 54-A |
| 037.5 | Explain how to make a slump test. | CC-57-A -- 63-A |

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UNIT 034 COMMERCIAL CONCRETE FORMS CC-1-A -- 593-A

SUB-UNIT B - WALL FORMS CC-191-A -- 276-A

COMPETENCY GOAL 038: After completion of this unit student will be able to identify types of wall forms, materials used to construct wall forms, and the parts of a wall form.

| Objectives | | Measures/Reference |
|---|---|---|
| 038.1 | Name types of wall forms. | CC-210-A -- 213-A |
| 038.2 | Select from a list types of materials used to construct wall forms. | CC-213-A |
| 038.3 | Identify parts of a wall form. | CC-214-A |
| 038.4 | Demonstrate the ability to construct panel forms. | CC-253-A -- 265-A |

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UNIT 034 COMMERCIAL CONCRETE FORMS CC-1-A -- 593-A

SUB-UNIT C - COLUMN FORMS CC-323-A -- 363-A

COMPETENCY GOAL 039: After completion of this unit student will be able to identify different types of column shapes and be able to construct forms for a square column.

| Objectives | | Measures/Reference |
|---|---|---|
| 039.1 | Match to their correct definitions terms associated with vertical piers and columns. | CC-331-A |
| 039.2 | Identify column shapes | CC-332-A - 333-A |
| 039.3 | Name common types of materials used for column forms. | CC-334-A |
| 039.4 | Demonstrate the ability to construct forms for a square column. | CC-337-A -- 340-A |

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UNIT 034 COMMERCIAL CONCRETE FORMS CC-1-A -- 593-A

SUB-UNIT D - BEAM FORMS CC-365-A -- 417-A

COMPETENCY GOAL 040: After completion of this unit student will be able to identify different types of beam forms and identify the parts of a beam form.

| Objectives | | Measures/Reference |
|---|---|---|
| 040.1 | Identify th parts of a beam form. | CC-379-A |
| 040.2 | Name types of beams. | CC-379-A |
| 040.3 | List types of materials used to construct beam forms. | CC-380-A |

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Grade Level: 11-12 Skills/Subject Area Carpentry

UNIT 035 METAL STUDS CC-371-B -- 418-B

COMPETENCY GOAL 041: After completion of this unit student will be able to layout walls and door jambs and should be able to install stud walls and door jambs using fireproof metal studs.

| Objectives | | Measures/Reference |
|---|---|---|
| 041.1 | Match terms associated with fireproof metal construction to their correct definitions. | CC-383-B |
| 041.2 | Name components of metal stud systems. | CC-3 B -- 384-B |
| 041.3 | Identify fasteners used for metal stud construction. | CC-384-B -- 387-B |
| 041.4 | Identify tools and equipment used in metal stud construction. | CC-387-B - 390-B |
| 041.5 | List where metal stud systems are used. | CC-390-B -- 391-B |
| 041.6 | Select from a list advantages of metal stud systems. | CC-391-B |
| 041.7 | Demonstrate the ability to layout wall lines, corners, partitions, and openings. | CC-393-B - 395-B |
| 041.8 | Demonstrate the ability to correctly install a metal stud wall. | CC-397-B -- 399-B |

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The following reference codes refer to the corresponding text. (See Bibliography above for further information concerning each text.)

| Ref. Code | Text |
|---|---|
| FC | Fundamentals of Carpentry |
| RC | Residential Carpentry |
| CC | Commercial Carpentry |
| V | VICA: Learn, Grow, Become |
| RR | Robert's Rules of Order |