

CARPENTRY

Curriculum Content Frameworks

Please note: All assessment questions will be taken from the knowledge portion of these frameworks.

Prepared by

Mike Haynie, Program Advisor
Doris Soenke, Secretary

Facilitated by

Karen Chisholm, Program Manager
Office of Assessment and Curriculum
Arkansas Department of Workforce Education

Edited by

Dennis Queen, Site Manager, May Construction Company
Nathan Koveleski, Assistant Project Manager, May Construction Company
Rick Brewer, Owner/Operator, Rick's Welding
Dick Burchett, Program Manager
Mike Haynie, Program Advisor
Office of Skilled and Technical Sciences / Technical and Professional Education
Arkansas Department of Workforce Education

Disseminated by

Career and Technical Education

Arkansas Department of Workforce Education

Curriculum Content Frameworks

Carpentry

Grade Levels: 9-12
Course Code: 494460

Prerequisite: Construction Technology

Course Description: This instructional program prepares individuals to apply technical knowledge and skills to lay out, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools.

Table of Contents

	Page
Unit 1: Identifying Tools Used in Carpentry	1
Unit 2: Referencing Technical Information	6
Unit 3: Using Math Skills for Construction	8
Unit 4: Using Construction Materials	11
Unit 5: Using Basic Carpentry Skills	12
Unit 6: Cutting and Shaping Stock	13
Unit 7: Interpreting Construction Drawings	14
Unit 8: Estimating and Selecting Materials	16
Unit 9: Preparing the Building Site	18
Unit 10: Framing a Floor	19
Unit 11: Framing a Wall	24
Unit 12: Framing a Ceiling	31

Unit 13: Framing a Roof	34
Unit 14: Installing Roofing	39
Unit 15: Constructing and Installing Stairs	42
Unit 16: Career and Technical Student Organizations (SkillsUSA/HOSA)	45
Glossary	50

Unit 1: Identifying Tools Used in Carpentry

Hours: 8

Terminology: Backsaw, Chalk line, Coping saw, Curved claw hammer, Hacksaw, Plumb bob, Rabbet, Straight claw hammer, Wood chisel

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
1.1 Define terminology related to tools used in carpentry	1.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to safety in regards to carpentry [1.3.6]
			Writing	Applies/Uses technical words and concepts [1.6.4]
				Uses words appropriately [1.6.21]

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
1.2 Describe how to maintain a clean, safe working environment	1.2.1 Establish an inventory of tools, materials, and other work items in an organized manner needed to maintain an orderly construction work space	Foundation	Arithmetic/ Mathematics	Applies addition, subtraction, and division to real-world situations [1.1.1]	
	1.2.2 Apply general safety guidelines in construction work zones			Adds and multiplies to prepare an inventory [1.1.40]	
			1.2.3 Prepare a list of accidents that result from failure to use appropriate guards	Reading	Adds and subtracts to determine inventory [1.1.41]
	1.2.4 Perform safety inspection of equipment and accessories				Applies information to job performance [1.3.4]
				Follows written directions [1.3.13]	
				Identifies relevant details, facts, and specifications [1.3.16]	
			Writing	Completes form accurately [1.6.7]	
				Records data [1.6.16]	
				Writes/Prints legibly [1.6.24]	
		Personal Management	Career Awareness, Development, and Mobility	Comprehends ideas and concepts related to carpentry [2.6.1]	
				Integrity/Honesty/ Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]
			Responsibility		Follows established rules, regulations, and policies [3.2.5]
				Accepts responsibility for position [3.4.1]	
				Pays close attention to details [3.4.8]	

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
1.3 Identify hand tools used for working in carpentry	1.3.1 Use correct hand tools for specific tasks in carpentry	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]	
	1.3.2 Differentiate between common hand tools and specialized hand tools used in carpentry			Applies information to job performance [1.3.4]	
		Thinking	Reasoning	Applies/Understands technical words that pertain to carpentry [1.3.6]	
				Uses logic to draw conclusions from available information [4.5.6]	
1.4 Identify power tools used for working in carpentry	1.4.1 Demonstrate correct use of power tools for specific tasks in carpentry	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]	
	1.4.2 Differentiate between common power tools and specialized power tools used in carpentry			Applies information to job performance [1.3.4]	
		Thinking	Reasoning	Applies/Understands technical words that pertain to carpentry [1.3.6]	
				Uses logic to draw conclusions from available information [4.5.6]	

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application		Skill Group	Skill	Description
1.5 State how to maintain and make minor adjustments to hand and power tools	1.5.1	Perform inspection process of hand and power tools to ensure proper working condition	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2] Follows written directions [1.3.13]
	1.5.2	Demonstrate the ability to comply with tool checkout procedures	Personal Management	Integrity/Honesty/Work Ethic	Complies with safety and health rules in a given work environment [3.2.2] Follows established rules, regulations, and policies [3.2.5]
	1.5.3	Demonstrate proper storage and cleaning of hand and power tools used in the construction field			
	1.5.4	Perform maintenance inspections associated with hand tools used in the construction field	Thinking	Responsibility	Comprehends ideas and concepts related to carpentry [3.4.2] Pays close attention to details [3.4.8]
	1.5.5	Perform maintenance inspections associated with power tools used in the construction field		Problem Solving	Identifies possible reasons for problem [4.4.6] Recognizes/Defines problem [4.4.8]
	1.5.6	Adjust carpentry hand tools using correct settings		Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2] Determines which conclusions are correct when given a set of facts and a set of conclusions [4.5.3]
	1.5.7	Adjust carpentry power tools using correct settings			

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
1.6 Describe correct use of ladders for maximum safety	1.6.1 Show common types of ladders used in the construction industry	Personal Management	Integrity/Honesty/Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]	
	1.6.2 Construct a list of uses for various types of ladders			Follows established rules, regulations, and policies [3.2.5]	
	1.6.3 Demonstrate safe setup of single, step, and extension ladders	Thinking	Reasoning	Responsibility Accepts responsibility for position [3.4.1] Pays close attention to details [3.4.8]	
	1.6.4 Perform inspection of ladder setup compliance with OSHA standards and guidelines			Reasoning Comprehends ideas and concepts related to carpentry [4.5.2] See relationship between two or more ideas, objects, or situations [4.5.5]	
1.7 Outline steps for setting up and using scaffold	1.7.1 Show how to apply common types of scaffolding used in the construction industry	Personal Management	Integrity/Honesty/Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]	
	1.7.2 Describe appropriate uses for various types of scaffolding			Follows established rules, regulations, and policies [3.2.5]	
	1.7.3 Explain safety considerations for setup of various types of scaffolding (e.g., manufactured, site-built)	Thinking	Reasoning	Responsibility Accepts responsibility for position (3.4.1) Pays close attention to details [3.4.8]	
	1.7.4 Perform inspection of the setup of scaffolding in compliance with industry guidelines			Reasoning Comprehends ideas and concepts related to carpentry [4.5.2] See relationship between two or more ideas, objects, or situations [4.5.5]	
	1.7.5 Demonstrate the setup of single and multi-level scaffolding in accordance with industry guidelines				

Unit 2: Referencing Technical Information

Hours: 4

Terminology: Bill of materials, Building code, Elevation, Plot plan, Scale, Section drawing

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application		Skill Group	Skill	Description
2.1 Define terminology related to technical information	2.1.1 Use terms appropriately in context		Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]
				Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]
2.2 List technical references to gather information	2.2.1 Determine specifications and guidelines for project, referencing manufacturer's manual		Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]
	2.2.2 Show how to reference manufacturer's directions for tool or equipment use				Applies information to job performance [1.3.4]
	2.2.3 Show how to reference textbooks, magazines, or trade journals for construction information				Draws conclusions from what is read [1.3.12] Reads and follows instructions to operate technical equipment [1.3.19] Uses standard occupational resource materials [1.3.22]
2.3 Identify local building code information	2.3.1 Research references to determine local ordinances and building standards		Foundation	Reading	Uses standard occupational resource materials [1.3.22]
	2.3.2 Determine the International Code Council (ICC) Building Codes, using the appropriate reference material				
	2.3.3 Discuss the National Electrical Codes (NEC), using appropriate references				
2.4 Reference electronic information sources	2.4.1 Utilize Internet sites for material or equipment information		Thinking	Reasoning	Uses logic to draw conclusions from available information [4.5.6]
	2.4.2 Utilize software packages or charts for estimating materials				
	2.4.3 Access software help information sources				

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
2.5 Describe the role of teams in the construction trade	2.5.1 Discuss the concept of Total Quality Management (TQM), focusing on materials provided	Interpersonal	Teamwork	Comprehends ideas and concepts related to carpentry [2.6.1]
	2.5.2 Point out on an organizational chart the role of construction workers from various trades typically found on a residential construction site	Personal Management	Organizational Effectiveness	Works effectively with others to reach a common goal [2.6.6] Comprehends the organization's modes of operation [3.3.5]

Unit 3: Using Math Skills for Construction

Hours: 10

Terminology: Area, Convert, Denominator, Fraction bar, Improper fraction, Mixed number, Numerator, Volume

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
3.1 Define terminology related to math skills used in construction	3.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
3.2 Identify measuring instruments found in the construction industry	3.2.1 Study the catalog of a supplier or manufacturer, and develop a set of specifications for a builder's level	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	3.2.2 Prepare a report by making a study of the procedures to follow and calculations required to determine the height of a flagpole, tall building, or mountain using the level-transit and trigonometric functions			Calculates measurements taken from measuring devices [1.1.9] Calculates percentages, ratios, proportions, decimals, and common fractions [1.1.10] Makes precision measurements using carpentry measuring instruments [1.1.27] Measures in metric units [1.1.29]	
			Reading	Locates pertinent information in documents -- such as manuals, graphs, and schedules -- to perform tasks [1.3.18] Reads and follows instructions to operate technical equipment [1.3.19]	

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
3.3 Describe the use of common and specialized units of measurement for construction materials	3.3.1 Apply common units of measure used for materials in the construction industry	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	3.3.2 Show how specialized units of measure are applied to various materials used			Calculates/Estimates carpentry materials [1.1.8]	
	3.3.3 Show how to calculate board footage			Calculates measurements taken from measuring devices [1.1.9]	
	3.3.4 Perform standard metric conversion for length, area, and volume			Calculates percentages, ratios, proportions, decimals, and common fractions [1.1.10]	
	3.3.5 Convert decimals to fractions				
3.4 Describe measurement technology (addition, subtraction, multiplication, and division) as they pertain to carpentry	3.4.1 Show how to correctly use electronic wiring locator devices	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	3.4.2 Demonstrate how to use a stud-finding instrument			Calculates/Estimates carpentry materials [1.1.8]	
	3.4.3 Use an electronic calculator to perform mathematical calculations (addition, subtraction, multiplication, and division)			Calculates measurements taken from measuring devices [1.1.9]	
	3.4.4 Discuss the use of measurement technology			Calculates percentages, ratios, proportions, decimals, and common fractions [1.1.10]	
	3.4.5 Demonstrate the use of hand-held laser measuring devices			Converts different units of measurement [1.1.17]	
3.5 List basic mathematics skills used in construction	3.5.1 Apply addition, subtraction, multiplication, and division to mathematical problems related to construction, involving whole numbers, fractions, mixed numbers, and decimals	Foundation	Arithmetic/ Mathematics	Applies addition, subtraction, and division to real-world situations [1.1.1]	
	3.5.2 Convert common fractions to decimals and decimals to common fractions			Converts different units of measurement [1.1.17]	

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
3.6 Explain how mathematical calculations using feet and inches are performed	3.6.1 Compute addition, subtraction, and conversion problems related to construction accurately 3.6.2 Perform, in your head, simple mathematical calculations used in the construction industry 3.6.3 Perform conversions of feet to inches and inches to feet	Foundation	Arithmetic/ Mathematics	Applies addition, subtraction, and division to real-world situations [1.1.1] Converts different units of measurement [1.1.17]	
3.7 Describe how to manipulate formulas common in the construction industry	3.7.1 Use the associative, communicative, and distributive properties 3.7.2 Depict the order of operations in mathematical calculations 3.7.3 Demonstrate basic algebraic skills used in the construction industry 3.7.4 Demonstrate the use of formulas to calculate board feet, square feet, cubic feet, square yards, and cubic yards	Foundation	Arithmetic/ Mathematics	Applies a mathematical formula to solve a problem [1.1.3] Chooses appropriately from a variety of mathematical techniques [1.1.11] Computes, using a formula [1.1.14] Uses basic numerical concepts in practical situations [1.1.32]	
3.8 List mathematical calculations involving practical geometry	3.8.1 Explain the use of the 3-4-5 triangle to lay out a square corner 3.8.2 Apply the Pythagorean Theorem 3.8.3 Demonstrate the use of formulas for computing area and volume 3.8.4 Perform mathematical calculations related to geometry used in the construction industry	Foundation	Arithmetic/ Mathematics	Applies a mathematical formula to solve a problem [1.1.3] Chooses appropriately from a variety of mathematical techniques [1.1.11] Computes, using a formula [1.1.14] Uses basic numerical concepts in practical situations [1.1.32] Uses basic algebraic symbols, terms, principles, and formulas [1.1.33]	

Unit 4: Using Construction Materials

Hours: 10

Terminology: Air dried, Annual rings, Board, Board foot, Box nail, Coniferous, Dimension, Finish nail, Galvanized, Mastics

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do			ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
4.1 Define terminology related to construction materials	4.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
4.2 Outline procedures for handling and storing construction materials	4.2.1 Demonstrate procedures for safe storage of various construction materials	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]	
	4.2.2 Apply procedures for safe storage of construction materials			Applies information and concepts derived from printed materials [1.3.3]	
	4.2.3 Indicate environmental considerations (humidity, light and physical restrictions) for lifting, carrying, and stacking various lumber products			Science	Analyzes environmental issues (ecology, pollution, waste management) [1.4.2] Applies knowledge to complete a practical task [1.4.3]
4.3 List various construction materials	4.3.1 Identify nail types and sizing units	Foundation	Reading	Follows written directions [1.3.13]	
	4.3.2 Discuss the uses of metal structural materials, and determine their advantages/disadvantages			Uses appropriate materials and techniques as specified [1.3.20]	
	4.3.3 Match a variety of metal framing connections with where each is used			Science	Applies knowledge to complete a practical task [1.4.3]
	4.3.4 Determine materials relevant to a specific construction job, including plywood, lumber, fasteners, adhesives, and millwork				

Unit 5: Using Basic Carpentry Skills

Hours: 5

Terminology: Apprenticeship, Entrepreneur, Manual dexterity, Operating engineers

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application		Skill Group	Skill	Description
5.1 Define terminology related to carpentry skills	5.1.1 Use terms appropriately in context		Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]
				Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]
5.2 Describe how to check stock and assemblies for squareness	5.2.1 Apply acceptable standards for squareness in various applications		Foundation	Arithmetic/ Mathematics	Uses common measuring devices/tools to measure carpentry materials [1.1.37]
	5.2.2 Relate the necessity for squareness in construction materials			Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]
	5.2.3 Show the necessity for squareness in construction procedures				
5.3 Outline how to measure various carpentry materials with a tape measure and level	5.3.1 Demonstrate the use of measuring and tape measure and level		Foundation	Arithmetic/ Mathematics	Calculates measurements taken from measuring devices [1.1.9]
	5.3.2 Show how to measure and mark stock materials within a limit of +/- 1/16"				Uses common measuring devices/tools to measure carpentry materials [1.1.37]
5.4 Select surfaces that are level and plumb, using a level	5.4.1 Show how to check horizontal surfaces to ensure they are level		Foundation	Arithmetic/ Mathematics	Calculates measurements taken from measuring devices [1.1.9]
	5.4.2 Demonstrate how to check vertical surfaces to ensure they are plumb				Uses common measuring devices/tools to measure carpentry materials [1.1.37]
5.5 Describe how to fasten stock with various metal fasteners (e.g., nails, screws, staples, and other mechanical fasteners) to masonry, wood, steel, concrete	5.5.1 Depict the use of appropriate fasteners for various materials and framing situations		Personal Management	Career Awareness, Development, and Mobility	Analyzes own knowledge, skills, and ability [3.1.2]
	5.5.2 Discuss the purpose of metal framing reinforcement units -- such as anchors, strapping, or ties -- and in what regions their use is especially important		Thinking		Decision Making

Unit 6: Cutting and Shaping Stock

Hours: 2

Terminology: Compass saw, Coping saw, Hacksaw, Utility knife

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
6.1 Define terminology related to cutting and shaping stock	6.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
6.2 Describe how to crosscut and rip stock to size	6.2.1 Cut stock materials to within +/- 1/16" of specifications	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	6.2.2 Cut material edges to an angle of 90 degrees			Uses common measuring devices/tools to measure carpentry materials [1.1.37]	
6.3 Outline how to bore large holes through wood	6.3.1 Lay out hole locations accurately to within +/- 1/32" for various material situations	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	6.3.2 Demonstrate the use of auger expansive bits to bore holes accurately to within +/- 1/32" diameter			Uses common measuring devices/tools to measure carpentry materials [1.1.37]	
6.4 Select and cut various joints	6.4.1 Cut material to proper dimensions, maintaining 90-degree angles on edges and cuts accurate to within +/- 1/32"	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	6.4.2 Perform miter cuts in accordance with industry guidelines	Thinking	Seeing Things in the Mind's Eye	Uses common measuring devices/tools to measure carpentry materials [1.1.37]	
	6.4.3 Ensure proper cut, squareness, and fit of joints			Visualizes a finished product [4.6.4]	

Unit 7: Interpreting Construction Drawings

Hours: 5

Terminology: Detail, Foundation, Pythagorean Theorem

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
7.1 Define terminology related to interpreting construction drawings	7.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
7.2 Identify the five basic drawings in a set of construction drawings	7.2.1 Distinguish between the following drawing plans: elevation, section, electrical, and detail drawings in a set of construction drawings	Foundation	Reading	Applies information and concepts derived from printed materials [1.3.3]	
	7.2.2 Show the different types of information found on plan, electrical, elevation, section, and detail drawings			Identifies relevant details, facts, and specifications [1.3.16]	
	7.2.3 Interpret symbols and notes used on plan, electrical, section, and detail drawings			Interprets drawings to obtain factual information [1.3.17]	
7.3 Identify symbols used to indicate basic materials on construction drawings	7.3.1 Apply symbols commonly used on construction drawings	Foundation	Reading	Locates pertinent information in documents -- such as manuals, graphs, and schedules -- to perform tasks [1.3.18]	
	7.3.2 Demonstrate the use of symbols to describe building components on construction drawings			Applies information and concepts derived from printed materials [1.3.3]	
	7.3.3 Explain the types of notes found on construction drawings			Identifies relevant details, facts, and specifications [1.3.16]	
	7.3.4 Draw symbols that represent the following materials: concrete, double-hung windows, interior door, refrigerator, wall lavatory, three-way switch, range outlet, wall fixture outlet			Interprets drawings to obtain factual information [1.3.17]	
				Locates pertinent information in documents -- such as manuals, graphs, and schedules -- to perform tasks [1.3.18]	

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
7.4 Label dimensions and information from a construction drawing	7.4.1 Review typical architectural dimensions found on construction drawings 7.4.2 Retrieve dimensions from construction drawings 7.4.3 Determine size information from various locations on a set of construction drawings 7.4.4 Determine location dimensions from a set of construction drawings 7.4.5 Identify the dimension lines on a set of construction drawings	Foundation	Reading	Applies information and concepts derived from printed materials [1.3.3] Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17] Locates pertinent information in documents -- such as manuals, graphs, and schedules -- to perform tasks [1.3.18]	
7.5 Outline steps to perform calculations using architectural dimensions	7.5.1 Show how to calculate heated and cooled living space for a floor plan 7.5.2 Calculate total area under roof of a floor plan 7.5.3 Find locations for various features from a floor plan 7.5.4 Find quantities for various components of a plan 7.5.5 Determine distances based on construction drawings	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6] Converts different units of measurement [1.1.17] Interprets charts, tables, graphs, and working drawings [1.1.25]	
7.6 Describe how to read/interpret scale of a drawing	7.6.1 Interpret reading of scales found on construction drawings, including 1/8"=1'0", 1/4"=1'0", 3/4"=1'0", etc.) 7.6.2 Perform measurement-to-scale and scale-to-measurement conversions 7.6.3 Show types of scales used for various construction drawings and details 7.6.4 Identify symbols, perform math computations for missing dimensions, and interpret a set of working drawings for a residential structure	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6] Converts different units of measurement [1.1.17] Interprets charts, tables, graphs, and working drawings [1.1.25]	

Unit 8: Estimating and Selecting Materials

Hours: 8

Terminology: Cubic foot method, Estimating, Material takeoff, Square-foot method

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application		Skill Group	Skill	Description
8.1 Define terminology related to estimating and selecting materials	8.1.1	Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]
				Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]
8.2 Label materials from construction drawings	8.2.1	Develop a cutting list from plans, indicating the size (to within +/- 1/16"), number of pieces, thickness, width, and length	Foundation	Arithmetic/ Mathematics	Applies addition to values in a sequence [1.1.2] Follows specified dimensions on plan [1.1.24]
				Thinking	Decision Making
8.3 State material and labor cost	8.2.2	Calculate number of framing members required for wall framing			
	8.3.1	Calculate flat labor rate required for construction workers	Foundation	Arithmetic/ Mathematics	Calculates dollar amounts [1.1.7]
					Calculates percentages, ratios, proportions, decimals, and common fractions [1.1.10]
8.3.2	Calculate labor profit (use current percentage for the industry)				
	8.3.3	Calculate material cost based on current material prices (use current percentage for the industry)			

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do			ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application		Skill Group	Skill	Description
8.4 Select proper use of materials	8.4.1	Apply appropriate material for a given project	Personal Management	Responsibility	Maintains a high level of concentration in completion of a task [3.4.7]
	8.4.2	Show common material defects and limitations			Pays close attention to details [3.4.8]
	8.4.3	Apply new and innovative construction materials and procedures	Thinking	Decision Making	Evaluates information/data to make best decision [4.2.5]
				Reasoning	Determines which conclusions are correct when given a set of facts and a set of conclusions [4.5.3]
					Sees relationship between two or more ideas, objects, or situations [4.5.5]
					Uses logic to draw conclusions from available information [4.5.6]

Unit 9: Preparing the Building Site

Hours: 7

Terminology: Benchmark (BM), Cross hairs, Differential leveling, Field notes, Fill, Station mark

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
9.1 Define terminology related to preparing the building site	9.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
9.2 Select building reference points	9.2.1 Apply accurate techniques to transfer benchmarks to building points	Foundation	Arithmetic/ Mathematics	Draws to scale [1.1.20]	
	9.2.2 Demonstrate how to transfer a line from a predetermined benchmark to a wall, checking accuracy with leveling devices			Follows specified dimensions on plan [1.1.24] Uses common measuring devices/tools to measure [1.1.37]	
9.3 Describe procedure for squaring building walls	9.3.1 Perform the rough layout of a building on a construction site	Foundation	Arithmetic/ Mathematics	Calculates measurements taken from measuring devices [1.1.9]	
	9.3.2 Discuss the importance of checking the placement of the batter boards after the excavation			Uses common measuring devices/tools to measure [1.1.37]	
	9.3.3 Show how to erect and square batter boards used for building construction	Personal Management	Career Awareness, Development, and Mobility	Analyzes own knowledge, skills, and ability [3.1.2]	
	9.3.4 Apply methods used to lay out and square walls of a building			Comprehends ideas and concepts related to carpentry [3.1.3]	
	9.3.5 Lay out and square walls, using transit level or 3-4-5 method	Thinking	Decision Making	Evaluates information/data to make best decision [4.2.5]	
	9.3.6 Operate modern laser technology used for building and foundation layout				

Unit 10: Framing a Floor

Hours: 10

Terminology: Firestop, Joist hanger, Sheathing, Underlayment

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
10.1 Define terminology related to framing a floor	10.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
10.2 Outline steps to check the condition of foundation prior to framing the floor	10.2.1 Show location of anchor bolts, openings, etc., on a foundation	Foundation	Arithmetic/ Mathematics	Makes rough measurements [1.1.28]	
	10.2.2 Evaluate a foundation for size, square, elevation, and condition of concrete or block	Thinking	Reading	Determines what information is needed [1.3.10]	
			Decision Making	Comprehends ideas and concepts related to carpentry [4.2.2] Demonstrates decision-making skills [4.2.4]	
10.3 Describe how to install sill plates	10.3.1 Show how to level and secure sill plates to foundation wall	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
			Reading	Determines what information is needed [1.3.10]	
	10.3.2 Demonstrate anchor methods (anchor bolts, nails, straps) for sill plates	Thinking	Decision Making	Comprehends ideas and concepts related to carpentry [4.2.2] Demonstrates decision-making skills [4.2.4]	
			Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.4]	

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
10.4 Select key points of floor-framing layout	10.4.1 Determine wall and floor openings from construction drawings	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	10.4.2 Apply layout procedures for floor joist and floor openings			Uses common measuring devices/tools to measure wall and floor openings [1.1.37]	
		Thinking	Reading	Identifies relevant details, facts, and specifications [1.3.16]	
				Decision Making	Interprets drawings to obtain factual information [1.3.17]
			Seeing Things in the Mind's Eye		Comprehends ideas and concepts related to carpentry [4.2.2]
					Demonstrates decision-making skills [4.2.4]
				Visualizes a finished product [4.6.4]	
10.5 Identify steps to cut and crown floor joists	10.5.1 Calculate and cut floor and header joists to correct length within +/- 1/16"	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	10.5.2 Demonstrate technique to form a 90-degree corner for floor/header joist			Uses common measuring devices/tools to measure wall and floor openings [1.1.37]	
	10.5.3 Show how to identify, mark, and install a joist with a crown			Identifies relevant details, facts, and specifications [1.3.16]	
		Thinking	Reading	Interprets drawings to obtain factual information [1.3.17]	
				Decision Making	Comprehends ideas and concepts related to carpentry [4.2.2]
					Seeing Things in the Mind's Eye

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do			ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
10.6 Outline steps to install floor joists	10.6.1 Demonstrate how to install floor joists according to construction drawings and specifications	Foundation Thinking	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24] Uses common measuring devices/tools to measure wall and floor openings [1.1.37]	
	10.6.2 Apply nailing patterns and techniques used to install floor joists		Reading	Identifies relevant details, facts, and specifications [1.3.16]	
	10.6.3 Demonstrate the use of joist hangers and framing anchors when assembling flooring frame members		Decision Making	Interprets drawings to obtain factual information [1.3.17] Comprehends ideas and concepts related to carpentry [4.2.2] Demonstrates decision-making skills [4.2.4]	
10.7 Identify cantilevered floor joists	10.7.1 Show methods to install cantilevered floor joists 10.7.2 Discuss why the cantilevered joists should extend inward at least twice as far as they stick out over the supporting wall	Foundation Thinking	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24] Uses common measuring devices/tools to measure wall and floor openings [1.1.37]	
			Reading	Identifies relevant details, facts, and specifications [1.3.16]	
			Decision Making	Interprets drawings to obtain factual information [1.3.17] Comprehends ideas and concepts related to carpentry [4.2.2] Demonstrates decision-making skills [4.2.4]	
			Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.4]	

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do			ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
10.8 Describe installation of bridging and blocking	10.8.1 Show nailing techniques and patterns used to install bridging and blocking	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	10.8.2 Demonstrate the use of the blocking installation techniques			Uses common measuring devices/tools to measure wall and floor openings [1.1.37]	
	10.8.3 Install bridging and blocking according to plans and specifications			Identifies relevant details, facts, and specifications [1.3.16]	
		Thinking	Decision Making	Interprets drawings to obtain factual information [1.3.17]	
				Comprehends ideas and concepts related to carpentry [4.2.2]	
				Demonstrates decision-making skills [4.2.4]	
			Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.4]	
10.9 Identify steps to install subfloor sheathing	10.9.1 Show considerations for subfloor sheathing regarding expansion and staggered joints	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	10.9.2 Determine layout patterns used when installing subfloor sheathing			Uses common measuring devices/tools to measure wall and floor openings [1.1.37]	
	10.9.3 Demonstrate the use of nailing techniques and patterns used to install subfloor sheathing			Identifies relevant details, facts, and specifications [1.3.16]	
	10.9.4 Install subfloor sheathing according to manufacturer's instructions			Interprets drawings to obtain factual information [1.3.17]	
		Thinking	Decision Making	Comprehends ideas and concepts related to carpentry [4.2.2]	
				Demonstrates decision-making skills [4.2.4]	
				Visualizes a finished product [4.6.4]	
			Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.4]	

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
10.10 Select fasteners for floor joist construction	10.10.1 Demonstrate the use of correct joist and beam hanger	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24] Uses common measuring devices/tools to measure wall and floor openings [1.1.37]
	10.10.2 Demonstrate use of specialized fasteners available for floor joist construction		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	10.10.3 Predict the advantages and disadvantages of specialized fasteners for joist construction	Thinking	Decision Making	Interprets drawings to obtain factual information [1.3.17] Comprehends ideas and concepts related to carpentry [4.2.2] Demonstrates decision-making skills [4.2.4]
	10.10.4 Demonstrate the use of specialized fasteners for framing a floor system		Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.4]
10.11 Describe engineered joist systems	10.11.1 Show characteristics of engineered joist systems (I-joists, trusses, etc.)	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24] Uses common measuring devices/tools to measure wall and floor openings [1.1.37]
	10.11.2 Explain installation of engineered joist systems		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	10.11.3 Relate the advantages and disadvantages of prefabricated steel bridging	Thinking	Decision Making	Interprets drawings to obtain factual information [1.3.17] Comprehends ideas and concepts related to carpentry [4.2.2] Demonstrates decision-making skills [4.2.4]
			Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.4]

Unit 11: Framing a Wall

Hours: 7

Terminology: Blocking, Header, Rough opening, Stud, Top plate

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
11.1 Define terminology related to framing a wall	11.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
11.2 Identify steps to laying out walls and stud framing detail on wall plates for floor deck	11.2.1 Apply stud spacing requirements for wall framing	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	11.2.2 Utilize construction plans to lay out wall stud locations on 16" or 24" centers as indicated on a construction plan		Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]	
11.3 Describe how to cut wall plate components	11.3.1 Verify rough openings, corners, and wall tee locations for framing the walls of a house	Foundation	Science	Applies knowledge to complete a practical task [1.4.3]	
			Thinking	Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]
			Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
11.3.2 Layout and cut framing components according to construction plans	11.3.3 Show how to cut door and window openings to proper width within +/- 1/16"	Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]	
			Science	Applies knowledge to complete a practical task [1.4.3]	
			Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]	

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
11.4 List wall framing components (headers, sill, and full, jack, and cripple studs)	11.4.1 Utilize construction plans to determine wall component lengths	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.4.2 Demonstrate how to cut wall framing components to proper length within +/- 1/16"		Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]
		Thinking	Science Reasoning	Applies knowledge to complete a practical task [1.4.3] Comprehends ideas and concepts related to carpentry [4.5.2]
11.5 Outline steps to assemble and install corner post and T-posts	11.5.1 Show how to assemble corner and T-post components for wall construction	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.5.2 Demonstrate installation of blocking flush with sides and square with T-post ends		Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]
	11.5.3 Demonstrate how to install corner posts and T-posts plumb and square with the structure		Science Reasoning	Applies knowledge to complete a practical task [1.4.3] Comprehends ideas and concepts related to carpentry [4.5.2]

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
11.6 Describe how to assemble headers for doors and windows	11.6.1 Compute header component dimensions for window and door installation	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.6.2 Use correct application to cut windows and door header components square and to correct length within +/- 1/16"		Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]
	11.6.3 Fabricate headers for door and window construction		Science	Applies knowledge to complete a practical task [1.4.3]
		Thinking	Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]
11.7 Identify frame door and window openings	11.7.1 Review the purpose of headers in wall construction	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.7.2 Demonstrate the construction of a header		Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]
	11.7.3 Compute door and window frame components for fabrication		Science	Applies knowledge to complete a practical task [1.4.3]
	11.7.4 Apply correct techniques for assuring squareness for door and window frame openings		Thinking	Reasoning

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
11.8 Describe construction and erection wall sections	11.8.1 Discuss the advantages of using P.E.T. lumber in constructing a wall section	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	11.8.2 Assemble wall components according to plate layout, keeping parts flush, within +/- 1/16"		Reading	Identifies relevant details, facts, and specifications [1.3.16]	
	11.8.3 Show how to square and brace wall sections to maintain squareness before attaching the sheathing		Science	Interprets drawings to obtain factual information [1.3.17]	
	11.8.4 Discuss different methods that can be used to erect a wall section		Applies knowledge to complete a practical task [1.4.3]		
	11.8.5 Review the use of wall jacks before raising the wall section		Thinking	Reasoning	Describes/Explains scientific principles related to carpentry [1.4.13]
11.9 Describe installation of a double top plate (cap plate)	11.9.1 Apply correct methods to tie wall sections and top plates together	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	11.9.2 Demonstrate how to cut a double top plate to correct length to break over studs and prevent joint breaking 4" from double top plate joint		Reading	Identifies relevant details, facts, and specifications [1.3.16]	
	11.9.3 Show how to install a double top plate flush with intersecting wall overlap		Science	Interprets drawings to obtain factual information [1.3.17]	
	11.9.4 Show how to install a top plate using nailing pattern in accordance with industry standards		Applies knowledge to complete a practical task [1.4.3]		
		Thinking	Reasoning	Describes/Explains scientific principles related to carpentry [1.4.13]	
				Comprehends ideas and concepts related to carpentry [4.5.2]	

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
11.10 Identify the when and where to install wall blocking (backing)	11.10.1 Show locations and necessity for wall blocking	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.10.2 Demonstrate calculation of wall blocking dimensions for various installations		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	11.10.3 Show how to cut and install wall blocking according to local code, ensuring all work is flush and appropriate fasteners used		Science	Interprets drawings to obtain factual information [1.3.17]
			Thinking	Applies knowledge to complete a practical task [1.4.3]
				Describes/Explains scientific principles related to carpentry [1.4.13]
				Comprehends ideas and concepts related to carpentry [4.5.2]
11.11 Describe the purpose of fire stops	11.11.1 Point out reasons for placing fire stops in the walls of a structure	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.11.2 Compute fire stop dimensions for installation in various locations of a structure		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	11.11.3 Show locations where fire stops are recommended or required		Science	Interprets drawings to obtain factual information [1.3.17]
	11.11.4 Show how to cut and install fire stops to meet local code requirements	Thinking	Applies knowledge to complete a practical task [1.4.3]	
			Reasoning	Describes/Explains scientific principles related to carpentry [1.4.13]
				Comprehends ideas and concepts related to carpentry [4.5.2]

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
11.12 Explain the purpose of corner braces and where they should be installed	11.12.1 Apply correct techniques for bracing building corners	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.12.2 Cut corner bracing to length within +/- 1/16" for installation at a 45-degree angle		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	11.12.3 Install corner brace on wall sections, ensuring proper installation and attachment		Science	Interprets drawings to obtain factual information [1.3.17] Applies knowledge to complete a practical task [1.4.3] Describes/Explains scientific principles related to carpentry [1.4.13]
		Thinking	Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]
11.13 Explain installation of exterior wall sheathing	11.13.1 Relate the purpose for using wall sheathing materials	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.13.2 Apply installation techniques and methods for various wall sheathing material		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	11.13.3 Distinguish between advantages and disadvantages of various wall sheathing materials		Science	Interprets drawings to obtain factual information [1.3.17] Applies knowledge to complete a practical task [1.4.3]
	11.13.4 Install wall sheathing materials according to manufacturer's specifications, using appropriate fasteners		Describes/Explains scientific principles related to carpentry [1.4.13]	
		Thinking	Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
11.14 Describe how to raise and anchor wall sections	11.14.1 Show location position for wall sections according to construction drawings	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.14.2 Apply techniques for raising wall sections into place		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	11.14.3 Demonstrate how to tie wall sections together with appropriate fasteners at correct intervals		Science	Interprets drawings to obtain factual information [1.3.17] Applies knowledge to complete a practical task [1.4.3] Describes/Explains scientific principles related to carpentry [1.4.13]
		Thinking	Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]
11.15 Explain the importance of plumbing and alignment when bracing a wall section	11.15.1 Demonstrate the use of a straightedge to check the plumbness	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]
	11.15.2 Align wall sections with appropriate leveling instruments		Reading	Identifies relevant details, facts, and specifications [1.3.16]
	11.15.3 Plumb and brace corner wall sections		Science	Interprets drawings to obtain factual information [1.3.17] Applies knowledge to complete a practical task [1.4.3] Describes/Explains scientific principles related to carpentry [1.4.13]
		Thinking	Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]

Unit 12: Framing a Ceiling

Hours: 7

Terminology: Gable roof, Hip roof, Rib-band, Strongback

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
12.1 Define terminology related to framing a ceiling	12.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]
12.2 Describe how to lay out ceiling framing	12.2.1 Determine ceiling framing layout from construction plans	Foundation	Arithmetic Mathematics	Calculates measurements taken from measuring devices [1.1.9]
	12.2.2 Lay out and mark ceiling joist locations on top plates according to construction plans		Reading	Interprets charts, tables, graphs, and working drawings [1.1.25] Comprehends written specifications, and applies them to a task [1.3.9] Identifies relevant details, facts, and specifications [1.3.16]
12.3 Identify the factors that should be considered when determining the length of span and spacing used for ceiling joists	12.3.1 Compute ceiling joist measurements from construction plans	Foundation	Science	Applies knowledge to complete a practical task [1.4.3] Describes/Explains scientific principles related to carpentry [1.4.13]
	12.3.2 Demonstrate how to measure and cut joists and trim ends consistent with construction plans within +/- 1/16"		Reading	Comprehends written specifications, and applies them to a task [1.3.9] Identifies relevant details, facts, and specifications [1.3.16]
			Science	Applies knowledge to complete a practical task [1.4.3]

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
12.4 Describe methods for fastening partitions that run parallel to the joists to the ceiling frame	12.4.1 Discuss the primary purpose of fastening the partitions to the ceiling frame is to provide support	Foundation	Arithmetic/ Mathematics	Calculates measurements taken from measuring devices [1.1.9]
	12.4.2 Using a stock plan, determine the wall and ceiling framing members required, the number of studs required if they are spaced 16" O.C., and the amount of wall sheathing required for the house shown on the stock plan		Reading	Interprets charts, tables, graphs, and working drawings [1.1.25] Comprehends written specifications, and applies them to a task [1.3.9] Identifies relevant details, facts, and specifications [1.3.16]
12.5 List details of framing the ceiling opening	12.5.1 Apply correct methods to brace and support ceiling openings	Foundation	Arithmetic/ Mathematics	Calculates measurements taken from measuring devices [1.1.9]
	12.5.2 Apply correct methods for laying out ceiling openings on ceiling joists			Interprets charts, tables, graphs, and working drawings [1.1.25]
	12.5.3 Lay out ceiling opening dimensions on ceiling joists		Reading	Comprehends written specifications, and applies them to a task [1.3.9]
	12.5.4 Install bracing for ceiling openings according to construction plans and local code		Science	Identifies relevant details, facts, and specifications [1.3.16] Applies knowledge to complete a practical task [1.4.3] Describes/Explains scientific principles related to carpentry [1.4.13]

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
12.6 Describe the purpose of a strongback (stiffener or catwalk)	12.6.1 Determine reasons for use of strongbacks in building framing 12.6.2 Demonstrate how strongbacks are constructed	Foundation	Arithmetic/ Mathematics Reading Science	Calculates measurements taken from measuring devices [1.1.9] Interprets charts, tables, graphs, and working drawings [1.1.25] Comprehends written specifications, and applies them to a task [1.3.9] Identifies relevant details, facts, and specifications [1.3.16] Applies knowledge to complete a practical task [1.4.3] Describes/Explains scientific principles related to carpentry [1.4.13]

Unit 13: Framing a Roof

Hours: 10

Terminology: Pitch, Purlin, Ridgeboard, Slope, Valley rafter

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
13.1 Define terminology related to framing a roof	13.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
13.2 Explain how to read roof framing details	13.2.1 Review the various types of roofs	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.2.2 Determine items used for load calculations for roof framing components		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.2.3 Interpret rafter layout patterns for common, header, and cripple rafters			Identifies relevant details, facts, and specifications [1.3.16]	
	13.2.4 Interpret truss rafter layout from construction plans		Science	Applies knowledge to complete a practical task [1.4.3]	
	13.2.5 Discuss structural components in common and truss rafter design				
	13.2.6 Demonstrate how to determine type of rafter, pitch, overhang, and spacing from construction plans				

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
13.3 Describe how to lay out common, cripple, jack, and header rafters	13.3.1 Follow construction drawing details to lay out roof framing on top plates	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.3.2 Compute common rater lengths for cutting, including overhang and layout for a specified pitch and bird's mouth		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.3.3 Compute cripple rafter length for cutting to include overhang and layout for a specified pitch and bird's mouth		Science	Identifies relevant details, facts, and specifications [1.3.16]	
	13.3.4 Compute jack rafter length for cutting to include overhang and layout for a specified pitch and bird's mouth			Applies knowledge to complete a practical task [1.4.3]	
	13.3.5 Lay out rafters for a specified pitch, overhang, and bird's mouth				
13.4 Select correct methods to lay out truss rafters	13.4.1 Follow construction drawing details to lay out roof framing on top plates	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.4.2 Compute truss rafter lengths for cutting, including overhang and layout for a specified pitch and bird's mouth		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.4.3 Lay out truss rafters for a specified pitch, overhang, and bird's mouth		Science	Identifies relevant details, facts, and specifications [1.3.16]	
13.5 Select common and truss rafters from a pattern	13.5.1 Apply reproduction techniques of common and truss rafters from a pattern	Foundation		Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]
13.5.2 Demonstrate how to cut common and truss rafter components	Reading		Comprehends written specifications, and applies them to a task [1.3.9]		
13.5.3 Rework common and truss rafters to length, including overhang			Science	Identifies relevant details, facts, and specifications [1.3.16]	
				Applies knowledge to complete a practical task [1.4.3]	

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
13.6 Describe installation of a ridge board	13.6.1 Apply correct installation methods for a ridge board	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.6.2 Demonstrate how to measure and cut ridge board with 90-degree ends		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.6.3 Install and brace a ridge board for rafter installation		Science	Identifies relevant details, facts, and specifications [1.3.16] Applies knowledge to complete a practical task [1.4.3]	
13.7 Explain important application considerations for roof openings	13.7.1 Apply correct methods to lay out, brace, and support roof openings	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.7.2 Lay out ceiling openings with necessary dimensions on ceiling joists		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.7.3 Explain methods to set lower header plumb and upper header at right angles to the roof slope for dormers		Science	Identifies relevant details, facts, and specifications [1.3.16] Applies knowledge to complete a practical task [1.4.3]	
	13.7.4 Install necessary bracing with plumb headers, beveled for slope, with appropriate clearance according to construction plans and local code				
13.8 Describe installation of common, cripple, and jack rafters	13.8.1 Apply correct techniques for handling and installing common, cripple, and jack rafter components	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.8.2 Install common, cripple, and jack rafters in proper position from construction plans, using appropriate fasteners		Reading	Comprehends written specifications, and applies them to a task [1.3.9] Identifies relevant details, facts, and specifications [1.3.16] Applies knowledge to complete a practical task [1.4.3]	

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
13.9 Explain the purpose of a roof truss to ceiling, joist, walls, top chord, tension, web, bottom chord, compression web, truss plates, truss connector	13.9.1 Discuss the advantages of using roof trusses for standard roof frames	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.9.2 Select plates and connectors that are commonly used in truss construction		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.9.3 Relate the means used to install roof trusses			Identifies relevant details, facts, and specifications [1.3.16]	
	13.9.4 Review the types of bracing commonly used to support roof trusses		Science	Applies knowledge to complete a practical task [1.4.3]	
13.10 Describe how to frame gable end overhang	13.10.1 Discuss construction of gable overhang for common rafter systems	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.10.2 Discuss construction of gable overhang for truss rafter systems		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.10.3 Construct overhang for common rafter systems according to construction plans			Identifies relevant details, facts, and specifications [1.3.16]	
	13.10.4 Construct overhang for a truss rafter system according to construction plans		Science	Applies knowledge to complete a practical task [1.4.3]	
13.11 Identify the purpose of collar beams (rafter ties)	13.11.1 Discuss the purpose of collar beams	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]	
	13.11.2 Compute collar beam dimensions and location on common rafters		Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	13.11.3 Lay out a collar beam based on dimensions from construction plans			Identifies relevant details, facts, and specifications [1.3.16]	
	13.11.4 Demonstrate how to cut a collar beam to length within +/- 1/16" and within an angle		Science	Applies knowledge to complete a practical task [1.4.3]	
	13.11.5 Show how to correctly position and install a collar beam on common rafters				

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
13.12 Explain the purpose of purlins in residential construction	13.12.1 Discuss reasons for positioning a purlin plate over a load-bearing partition	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]
	13.12.2 Apply correct methods to install purlins on a common rafter system		Reading	Comprehends written specifications, and applies them to a task [1.3.9]
	13.12.3 Demonstrate how to cut purlins to length within +/- 1/16" with a correct angle of +/- 1 degree		Science	Identifies relevant details, facts, and specifications [1.3.16]
	13.12.4 Show how to position and install a purlin as specified within +/- 1/8"			Applies knowledge to complete a practical task [1.4.3]
13.13 Describe installation of roof sheathing	13.13.1 Apply correct nailing patterns used for various roof sheathing materials	Foundation	Arithmetic/ Mathematics	Interprets charts, tables, graphs, and working drawings [1.1.25]
	13.13.2 Show how to lay out patterns used when installing roof sheathing		Reading	Comprehends written specifications, and applies them to a task [1.3.9]
	13.13.3 Apply techniques to align roof sheathing on rafter center with roof sheathing face grain perpendicular to rafters in accordance with manufacturer's instructions		Science	Identifies relevant details, facts, and specifications [1.3.16] Applies knowledge to complete a practical task [1.4.3]

Unit 14: Installing Roofing

Hours: 5

Terminology: Dormer, Right triangle, Square root

CAREER and TECHNICAL SKILLS			ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do			What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
14.1 Define terminology related to installing a roof	14.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
14.2 Describe how to install roofing underlayment	14.2.1 Discuss why roofing underlayment is used	Foundation	Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	14.2.2 Research various products used for roofing underlayment			Identifies relevant details, facts, and specifications [1.3.16]	
	14.2.3 Install and nail roofing underlayment		Science	Applies knowledge to complete a practical task [1.4.3]	
14.3 Explain the purpose of roof flashing, and list materials commonly used as flashing	14.3.1 Discuss the reason various locations need roof flashing	Foundation	Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	14.3.2 Choose various roof flashing materials and shapes, and show where they are used			Identifies relevant details, facts, and specifications [1.3.16]	
	14.3.3 Apply correct methods for attaching roof flashing material to a structure		Science	Applies knowledge to complete a practical task [1.4.3]	
	14.3.4 Install roof flashing materials according to manufacturer's specifications				

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
14.4 Describe various types of roofing material and their uses	14.4.1 Differentiate between various types of available roofing material	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	14.4.2 Distinguish between various patterns used for applying shingles		Reading	Identifies relevant details, facts, and specifications [1.3.16]	
	14.4.3 Distinguish between nailing patterns and procedures used in applying shingles			Interprets drawings to obtain factual information [1.3.17]	
	14.4.4 Compare wood shingles and wood shakes	Thinking	Science	Applies knowledge to complete a practical task [1.4.3]	
	14.4.5 Compare the advantages/disadvantages of using roofing tile over other roofing products			Describes/Explains scientific principles related to carpentry [1.4.13]	
	14.4.6 Compare sheet metal roofing with aluminum roofing		Reasoning	Comprehends ideas and concepts related to carpentry [4.5.2]	
	14.4.7 Discuss the composition and manufacture of Terne metal roofing				
14.5 Describe how hip or ridge shingles are attached to the roof	14.5.1 Discuss reasons to use ridge cap installation patterns	Foundation	Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	14.5.2 Apply correct methods for installing ridge cap shingles in various locations on a roof			Identifies relevant details, facts, and specifications [1.3.16]	
	14.5.3 Lay out, cut, and install a ridge cap with appropriate overlap		Science	Applies knowledge to complete a practical task [1.4.3]	
	14.5.4 Apply sealant to exposed nails and fasteners after installation of ridge cap shingles				

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
14.6 Explain the preparations necessary before installing woven or closed-out valleys	14.6.1 Compare and contrast woven/closed-out valleys	Foundation	Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	14.6.2 Determine reasons for installation patterns of shingles in roof valleys			Identifies relevant details, facts, and specifications [1.3.16]	
	14.6.3 Relate installation and nailing patterns accepted for shingle installation in valleys		Science	Applies knowledge to complete a practical task [1.4.3]	
	14.6.4 Install shingles in a valley according to manufacturer's specifications				
14.7 State the importance of correctly installing roofing materials and adequate flashing around roof openings (pipes, skylights, chimneys)	14.7.1 Discuss installation patterns accepted in industry for shingle installation at roof openings	Foundation	Reading	Comprehends written specifications, and applies them to a task [1.3.9]	
	14.7.2 Discuss special considerations for shingle installation near roof flashing			Identifies relevant details, facts, and specifications [1.3.16]	
	14.7.3 Demonstrate how to install composite shingles around roof opening, tight with no leakage, ensuring nails do not pierce flashing		Science	Applies knowledge to complete a practical task [1.4.3]	

Unit 15: Constructing and Installing Stairs

Hours: 10

Terminology: Baluster, Balustrade, Closed stairway, Headroom, Landing, Stairwell, Unit rise

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
15.1 Define terminology related to construction and installation of stairs	15.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to carpentry [1.3.6]
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]
15.2 Identify various components related to stair construction	15.2.1 Discuss how the construction of stairways has evolved over the years	Foundation	Arithmetic/ Mathematics	Applies addition, subtraction, and division to real-life situations [1.1.1]
	15.2.2 Address when stairways are typically installed in a construction project			Calculates measurements taken from measuring devices [1.1.9]
	15.2.3 Distinguish between main stairs and service stairs			Comprehends written information and applies it to a task [1.3.8]
	15.2.4 Distinguish basic stair riser shaper -- vertical, sloping, and open			Applies knowledge to complete a practical task [1.4.3]
	15.2.5 Distinguish between unit run and rise and total run and rise			Reads measurements from common measuring devices [1.4.20]

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
15.3 Describe how to calculate rise and run for stairs	15.3.1 Discuss various stair designs, characteristics, terminology, and uses	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	15.3.2 Identify the three generally accepted rules for calculating the rise-run or riser-tread ratio		Reading	Comprehends written information, and applies it to a task [1.3.8]	
	15.3.3 Review problems that may occur if an incorrect riser-tread ratio is used in stair construction		Science	Applies knowledge to complete a practical task [1.4.3]	
	15.3.4 Apply various construction methods for various stair designs				
	15.3.5 Verify rough opening width, total rise, and total run for stair construction				
	15.3.6 Compute individual rise heights and run lengths needed for layout of stair stringers				
	15.3.7 Compute finished dimensions for riser and tread components				
15.4 Explain how to lay out stringer for a given rise and run	15.4.1 Demonstrate how to lay out a stair stringer, using framing square and square gauges to dimensions within +/- 1/16"	Foundation	Arithmetic/ Mathematics	Follows specified dimensions on plan [1.1.24]	
	15.4.2 Demonstrate how to lay out a stair stringer for second floor header and first floor landing, using framing square and square gauges with an accuracy of +/- 1/16"		Reading	Identifies relevant details, facts, and specifications [1.3.16]	
	15.4.3 Determine special layout considerations for finish floor, nosing, etc.		Science	Interprets drawings to obtain factual information [1.3.17]	
	15.4.4 Lay out riser and tread components	Thinking	Reasoning	Applies knowledge to complete a practical task [1.4.3]	
				Describes/Explains scientific principles related to carpentry [1.4.13]	
				Comprehends ideas and concepts related to carpentry [4.5.2]	

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
15.5 Explain how the riser height is determined using a story pole and how these dimensions are transferred to a stringer and laid out with a framing square	15.5.1 Explain how to cut stringers, risers, and treads for stairs to correct dimensions within +/- 1/32"	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	15.5.2 Cut stringer for second floor header and first floor landing to correct dimension within +/- 1/32"		Science	Applies knowledge to complete a practical task [1.4.3]	
15.6 Identify stair types	15.6.1 Discuss complaints that are commonly associated with winder stairs	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6]	
	15.6.2 Explain how the wider-tread width is determined for wider stairs		Reading	Follows written directions [1.3.13]	
	15.6.3 Label the parts of an open stair				
	15.6.4 Address the advantages offered by spiral stairways in residential construction				
	15.6.5 Show how disappearing stairs are used in residential construction				
	15.6.6 Demonstrate how to assemble and install assembled stair unit in rough opening using appropriate fasteners				
	15.6.7 Verify finished stair dimensions comply with design criteria				

Unit 16: Career and Technical Student Organizations (SkillsUSA/HOSA)

Hours: 12

Terminology: Assess, Assessment, Behavior, Business meeting, Career, Competency, Critique, Cultural diversity, Customer, Equity issue, Expectation, Government, Image, Interview, Job application, Journal, Management, Mentor, Organizational chart, Parliamentary procedure, Portfolio, Presentation, Professional organization, Résumé, Self-motivation, Short-term goals, Stress, Task, Trade unions

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
16.1 Define terminology related to student organizations	16.1.1 Use terms appropriately in context	Foundation	Reading	Applies/Understands technical words that pertain to student organizations [1.3.6]	
			Writing	Applies/Uses technical words and concepts [1.6.4] Uses words appropriately [1.6.21]	
16.2 Outline a self-assessment, and identify individual learning styles	16.2.1 Show individual strengths	Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3]	
	16.2.2 Show areas in need of improvement	Thinking	Problem Solving	Identifies possible reasons for problem [4.4.6]	
16.3 Describe self-motivation techniques, and establish short-term goals	16.3.1 Prepare a list of short-term goals	Personal Management	Self-esteem	Develops/Initiates a plan for self-improvement [3.5.4]	
	16.3.2 Discuss ways to change or improve lifestyle appearance and behavior	Thinking	Creative Thinking	Identifies new goals and objectives [4.1.8]	
16.4 Give examples of individual time-management skills	16.4.1 Prepare and maintain a time journal	Foundation	Writing	Prepares a complex document in a concise manner [1.6.12]	
	16.4.2 Outline ways to improve time-management skills	Thinking	Problem Solving	Devises and implements a plan of action to resolve problem [4.4.3] Recognizes/Defines problem [4.4.8]	
16.5 Predict future occupations	16.5.1 Research the Internet to explore for career opportunities within specified fields of study	Foundation	Reading	Draws conclusions from what is read [1.3.12]	
			Writing	Summarizes written information [1.6.17]	
	16.5.2 Prepare a presentation on a specified career area	Personal Management	Career Awareness, Development, and Mobility	Explores career opportunities [3.1.6]	
		Thinking	Creative Thinking	Prepares presentation based on subject research, interviews, surveys [4.1.10]	

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
16.6 Identify the customer	16.6.1 Differentiate between external and internal customers	Interpersonal	Customer Service	Recognizes effects of positive/negative attitudes on customers [2.3.7]
	16.6.2 Identify factors that contribute to poor customer relationships	Thinking	Decision Making	Shows initiative and courtesy in meeting and working with customers [2.3.8] Evaluates information/data to make best decision [4.2.5]
16.7 Identify the benefits of doing a community service project	16.7.1 Outline ways to become involved in the community	Foundation	Speaking	Organizes ideas, and communicates oral messages to listeners [1.5.7]
	16.7.2 Develop a community service project	Interpersonal	Teamwork	Contributes to group with ideas, suggestions, and effort [2.6.2]
16.8 Describe effective communication with others	16.8.1 Note personal barriers to listening	Thinking	Problem Solving	Recognizes/Defines problem [4.4.8]
	16.8.2 Relate a personal plan to overcome barriers to listening			Revises plan of action indicated by findings [4.4.9]
16.9 Give locations for a shadowing activity	16.9.1 Summarize and relate an experience of job shadowing activity	Interpersonal	Leadership	Encourages/Motivates members of a group or team [2.4.6]
16.10 Identify the components of an employment portfolio	16.10.1 Present parts of a portfolio	Foundation	Writing	Completes form accurately [1.6.7]
	16.10.2 Compile a personal employment portfolio for an interview			Composes and creates documents – letters, manuals, reports, proposals, graphs, flow charts, etc. [1.6.8]
16.11 List proficiency in program competencies	16.11.1 Construct an interpersonal competency assessment	Foundation	Writing	Analyzes data, summarizes results, and makes conclusions [1.6.2]
16.12 Describe how to measure/modify short-term	16.12.1 Discuss how to pursue short-term goals	Thinking	Creative Thinking	Identifies new goals and objectives [4.1.8]
16.13 Identify stress sources	16.13.1 Prepare a list of personal sources of stress	Foundation	Writing	Communicates thoughts, ideas, or facts in written form in a clear, concise manner [1.6.6]
	16.13.2 Outline techniques to cope with individual sources of stress	Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS		
What the Student Should be Able to Do		What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
16.14 Identify characteristics of a positive image	16.14.1 List behaviors and traits that lead to a positive image	Foundation	Reading	Determines what information is needed [1.3.10]
	16.14.2 Note behaviors and traits that lead to a negative image	Personal Management	Self-esteem	Comprehends the importance of a positive self-concept [3.5.1] Develops/Initiates a plan for self-improvement [3.5.4]
		Thinking	Decision Making	Identifies pros and cons to assist in decision-making process [4.2.7]
			Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]
16.15 Describe how team skills can be applied to a group project	16.15.1 Form a team to develop a class project	Interpersonal	Teamwork	Works effectively with others to reach a common goal [2.6.6]
16.16 Outline how to observe and critique a meeting	16.16.1 Attend a formal meeting held in the community	Foundation	Writing	Composes and creates documents – letters, manuals, reports, proposals, graphs, flow charts, etc. [1.6.8]
	16.16.2 Prepare a critique of the meeting attended	Interpersonal	Customer Service	Shows initiative and courtesy in meeting and working with customers [2.3.8]
16.17 List business meeting skills	16.17.1 Relate the basic rules required to ensure an orderly and business-like meeting	Foundation	Speaking	Organizes ideas, and communicates oral messages to listeners [1.5.7]
	16.17.2 Demonstrate with role-playing to illustrate appropriate meeting skills	Interpersonal	Leadership	Conveys attitudes and values of group to others [2.4.3] Influences group behavior [2.4.8]
16.18. Outline a survey for employment opportunities	16.18.1 Compile information on a particular employment opportunity of interest	Foundation	Writing	Presents own opinion in written form in a clear, concise manner [1.6.14]
	16.18.2 Perform an Internet search of a specific career area	Personal Management	Career Awareness, Development, and Mobility	Develops skills to locate, evaluate, and interpret career information [3.1.4]
16.19 Select a professional journal for review and develop a three- to five-minute presentation	16.19.1 Prepare a presentation on the content, purpose, and distribution of a particular professional journal	Foundation	Writing	Prepares a complex document in a concise manner [1.6.12]

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
16.20 Identify customer expectations	16.20.1 List customer expectations 16.20.2 Discover the consequences of unmet customer expectations	Interpersonal	Customer Service	Applies human relations skills in real-life situations [2.3.1] Recognizes effects of positive/negative attitudes on customers [2.3.7] Works with customers to satisfy their expectations [2.3.9]
16.21 List parts of a job application	16.21.1 Prepare a job application from various businesses in the community 16.21.2 Demonstrate a mock job interview	Foundation	Reading Speaking Writing	Determines what information is needed [1.3.10] Communicates a thought, idea, or fact in spoken form [1.5.5] Uses verbal language and other cues, such as body language, appropriate in style, tone, and level of complexity to the audience and the occasion [1.5.14] Completes form accurately [1.6.7]
16.22 Outline your employment portfolio	16.22.1 Construct a personal employment portfolio	Foundation	Writing	Composes and creates documents – letters, manuals, reports, proposals, graphs, flow charts, etc. [1.6.8] Produces neat, legible document from typewriter or computer [1.6.15] Summarizes written information [1.6.17] Uses language, style, organization, and format appropriate to subject matter, purpose, and audience [1.6.19]
16.23 Identify supervisory and management roles in an organization	16.23.1 Prepare an organizational chart 16.23.2 Outline the responsibilities of managers and supervisors	Foundation Interpersonal Thinking	Writing Leadership Creative Thinking	Produces neat, legible document from typewriter or computer [1.6.15] Helps an individual or group challenge existing procedures, policies, or authority [2.4.7] Develops visual aids to create audience interest [4.1.4]

CAREER and TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC and WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
16.24 Outline safety issues	16.24.1 Research safety issues within a given career area	Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]
			Science	Follows safety guidelines [1.4.15]
		Personal Management	Integrity/Honesty/Work Ethic	Follows established rules, regulations, and policies [3.2.5]

Glossary

Unit 1: Identifying Tools Used in Carpentry

1. Backsaw — has a thin blade reinforced with a steel strip along the back edge; teeth are small, cuts produced are fine; used mostly for interior finish work
2. Chalk line — a line covered with chalk is held tight and close to the surface, then it is snapped; this action drives the chalk onto the surface forming a distinct mark; a special reel rechalks the line each time it is wound back into the case
3. Coping saw — has a thin, flexible blade that is pulled tight by the saw; blade has 15 teeth per inch, makes very fine cuts
4. Curved claw hammer — used to drive/pull nails; most common hammer
5. Hacksaw — blades are made of high speed steel, tungsten alloy steel, molybdenum steel, and other special alloys; heat-treated, very brittle, easily broken; preferred use on metals
6. Plumb bob — also referred to as a *plummet*; a weight with a pointed tip on the bottom that is suspended from a string and used as a reference line that is perpendicular to the ground; used since the time of the ancient Egyptians by bricklayers, masons, and carpenters to ensure that their constructions are "square" or perfectly upright; also may be used in surveying to sight a point on the ground that is not readily visible
7. Rabbet — a rectangular shape consisting of two surfaces cut along the edge or end of a board
8. Straight claw hammer — used for general construction in driving and drawing nails
9. Wood chisel — used to trim and cut away wood or composition materials to form joints or recesses; helpful in paring and smoothing small, interior surfaces that are inaccessible for other edge tools

Unit 2: Referencing Technical Information

1. Bill of materials — a list of all materials corresponding to a drawing or set of drawings for a project
2. Building code — specific requirement for construction methods and materials for construction
3. Elevation — the height of an object above grade level; also means a type of drawing that shows the front, rear, and sides of a building
4. Plot plan — a plan view drawing that shows the site and location/orientation of the buildings on the property
5. Scale — a term that specifies the size of a reduced size drawing; for example, a plan is drawn to 1/4" scale if every 1/4" represents 1' on the real structure
6. Section drawing — a type of drawing that shows how a part of a structure looks as if cut by a plane

Unit 3: Using Math Skills for Construction

1. Area – the bounded edge of a surface; the area of a square or rectangular shape can be determined by multiplying the length of two adjoining sides
2. Convert – to express (a quantity) in alternative units: converting feet into meters
3. Denominator – the bottom number of a fraction; tells how many parts the whole is divided into
4. Fraction bar – the line on a fraction that separates the top number from the bottom number
5. Improper fraction – a fraction in which the numerator is larger than the denominator; an improper fraction is always equal to a value greater than one
6. Mixed number – a number with a whole number part and a fractional part; another way of expressing a value greater than one; can be converted to an improper fraction
7. Numerator – the top number of a fraction; tells how many parts are in the fraction
8. Volume – a measure of three dimensions -- length, width, and height; the product is given in cubic inches, cubic feet, or cubic yards; to find the volume of a cube, box, or rectangular cylinder, multiply the three dimensions together

Unit 4: Using Construction Materials

1. Air dried – technique of removing water from lumber, using natural wind currents
2. Annual rings – the rings seen when viewing a cross-section of a tree trunk; each ring constitutes one year of tree growth
3. Board – lumber usually less than two inches thick
4. Board foot – a measure of lumber volume that equals one foot square and one inch thick or any equivalent lumber volume; the letter M is used to represent 1,000 feet
5. Box nail – a thin nail with a head, usually coated with a material to increase its holding power
6. Coniferous – trees that are cone-bearing; also known as evergreen trees
7. Dimension – a term used to define a measurement of an item; also used to refer to all 2x lumber used in framing
8. Finish nail – a thin nail with a small head designed for setting below the surface of finish material
9. Galvanized – protected from rusting by a coating of zinc
10. Mastics – a thick adhesive

Unit 5: Using Basic Carpentry Skills

1. Apprenticeship – a legal agreement to work for another for a specific amount of time in return for instruction in a trade, art, or business
2. Entrepreneur – a person who starts, manages, and assumes the risk for a business venture
3. Manual dexterity – adroitness using the hands
4. Operating engineers – those who operate heavy equipment, such as cranes, bulldozers, and backhoes

Unit 6: Cutting and Shaping Stock

1. Compass saw – a saw used to make curved cuts
2. Coping saw – a saw used primarily to cut molding into a coped joint; also used to make any small, irregular curved cuts in wood or other soft material
3. Hacksaw – a saw generally used to cut thin material such as metal; coarse-toothed blades are used for fast cutting in thicker material, and fine-toothed blades are used for smooth cutting and thinner material
4. Utility knife – a universal cutting tool frequently used to cut gypsum board, soft boards, and a variety of finished materials; blades may be sharpened on a whetstone or are replaceable

Unit 7: Interpreting Construction Drawings

1. Detail – close-up view of a plan or section
2. Foundation – part of a wall on which the major portion of the structure is erected
3. Pythagorean Theorem – a mathematical expression that states the sum of the square of the two sides of a right triangle equals the square of the diagonal

Unit 8: Estimating and Selecting Materials

1. Cubic foot method – produces an estimate of the building cost based on the volume of the house
2. Estimating – an organized effort to determine the total cost of materials, labor, and other services required to build a house
3. Material takeoff – a method of estimating building cost that is accurate and obtained by determining the quantity, quality, and cost of materials to be used and cost of labor required for installation
4. Square-foot method – method used to estimate building costs based on the total area in the house

Unit 9: Preparing the Building Site

1. Benchmark (BM) – a relatively permanent object with a known elevation located near or on a site; for example, iron stakes driven into the ground, a concrete monument with a brass disk in the middle, a chiseled mark at the top of a concrete curb, etc.
2. Cross hairs – a set of lines, typically horizontal and vertical, placed in a telescope used for sighting purposes
3. Differential leveling – a method of leveling used to determine the difference in elevation between two points
4. Field notes – a permanent record of field measurement data and related information
5. Fill – adding soil or rock on site to achieve a required elevation
6. Station mark – the point where a level-transit is located; a reference point such as a stake or a paint mark directly below the center of the instrument

Unit 10: Framing a Floor

1. Firestop — an approved material used to fill air passages in a frame to retard the spread of fire
2. Joist hanger — a metal stirrup secured to the face of a structural member, such as a girder, to support and align the ends of joists flush with the member
3. Sheathing — boards or sheet material fastened to floors, roofs, or walls
4. Underlayment — a material, such as particleboard or plywood, laid on top of the subfloor to provide a smoother surface for the finished flooring

Unit 11: Framing a Wall

1. Blocking – a wood block used as a filler piece and support between framing members
2. Header – a horizontal structural member that supports the load over an opening such as a door or window
3. Rough opening – an opening in the framing formed by framing members, usually for a window or door
4. Stud – the main vertical framing member in a wall or partition
5. Top plate – the upper horizontal framing member for a wall used to carry the roof trusses or rafters

Unit 12: Framing a Ceiling

1. Gable roof – a roof with two slopes that meet at a center ridge
2. Hip roof – a roof with four sides or slopes running toward the center
3. Rib-band – a 1X4 nailed to the ceiling joists at the center of the space to prevent twisting and bowing of the joists
4. Strongback – L-shaped wooden support attached to tops of ceiling joists to strengthen them, maintain spacing, and bring them to the same level

Unit 13: Framing a Roof

1. Pitch — the angle or degree of slope of the roof in relation to the span
2. Purlin — a horizontal roof support member parallel to the plate and installed between the plate and the ridgeboard
3. Ridgeboard — the highest horizontal roof member
4. Slope — the inclination of the roof surface expressed as the relationship of rise to run; roof slope is sometimes referred to as the *roof cut*
5. Valley rafter — a roof member that extends from the inside corner of the top plate to the ridge along the lines where two roofs intersect

Unit 14: Installing Roofing

1. Dormer – a framed structure that projects out from a sloped roof; provides additional space and is often used in a Cape Cod-style home
2. Right triangle – a triangle containing a 90-degree angle
3. Square root – a number that when multiplied by itself will yield a given number (e.g., 3 is the square root of 9)

Unit 15: Constructing and Installing Stairs

1. Baluster – a supporting column or member; a support for a railing, particularly one of the upright columns of a balustrade
2. Balustrade – a stair rail assembly consisting of a handrail, balusters, and posts
3. Closed stairway – a stairway that has solid walls
4. Headroom – the vertical and clear space in height between a stair tread and the ceiling or stairs above
5. Landing – a horizontal area at the end of a flight of stairs or between two flights of stairs
6. Stairwell – a compartment extending vertically through a building into which stairs are placed
7. Unit rise – the vertical distance from the top of one stair tread to the top of the next one above it; also called a *stair rise*

Unit 16: Career and Technical Student Organizations (SkillsUSA / HOSA)

1. Assess – to determine the value, significance, or extent; to judge
2. Assessment – a tool used to determine value, significance, or extent
3. Behavior – the actions one takes; how one conducts oneself
4. Business meeting – a planned gathering of individuals (occupational, work, trade, or organizational) that is methodical and systematic; the meeting is for a common purpose
5. Career – a chosen pursuit; the general course of progression of one's working life
6. Competency – the knowledge that enables one to comprehend and complete a task
7. Critique – a critical review or commentary
8. Cultural diversity – integrated existence of ethnic groups based on their values, beliefs, behavior patterns (social, educational, economic, religious, artistic values)
9. Customer – one who buys goods or services
10. Equity issue – a point of matter affecting the justice and fairness for all concerned
11. Expectation – eager anticipation; to look forward to the probable occurrence or appearance of something
12. Government – the agency or apparatus through which a governing individual or body functions and exercises authority
13. Image – the public's opinion or concept of something
14. Interview – a formal, in-person meeting in which the assessment of the qualifications of an applicant are demonstrated/determined
15. Job application – a form or document used by an employer when hiring prospective employees
16. Journal – a personal record of occurrences, experiences, and reflections kept on a regular basis
17. Management – the person or people who control or direct a business or other enterprise
18. Mentor – a wise or trusted counselor or teacher
19. Organizational chart – a chart that reflects the structure through which individuals cooperate systematically to conduct business
20. Parliamentary procedure – a body of rules governing a meeting

21. Portfolio – a portable case for holding materials, such as photographs, drawings, or other materials that represent a person's work
22. Presentation – a performance; a formal introduction; the process of offering for consideration or display
23. Professional organization – a service provider utilizing a business relationship that allows outsourcing of human resources tasks, mainly for small to mid-sized businesses that do not have the need or resources for a dedicated human resources department; the concept is virtually unknown outside the United States
24. Résumé – a brief account of one's professional or work experience and qualifications; often submitted with a job application
25. Self-motivation – to take action, move forward of one's own volition
26. Short-term goals – goals or targets that are reachable within a short or brief period of time
27. Stress – an extreme pressure, strain, or difficulty
28. Task – a function to be performed
29. Trade unions – a labor union, especially one limited in membership to people in the same trade