

## DESE Model Curriculum

**GRADE LEVEL/COURSE TITLE:** Carpentry, Introductory Craft Skills –  
Module 27202-07 Roofing Applications

**Course Code:**

### **COURSE INTRODUCTION:**

17003 Carpentry

Carpentry courses provide information related to the building of wooden structures, enabling students to gain an understanding of wood grades and construction methods and to learn skills such as laying sills and joists; erecting sills and rafters; applying sheathing, siding, and shingles; setting door jambs; and hanging doors. Carpentry courses may teach skills for rough construction, finish work, or both. Students learn to read blueprints, draft, use tools and machines properly and safely, erect buildings from construction lumber, perform finish work inside of buildings, and do limited cabinet work. Carpentry courses may also include career exploration, good work habits, and employability skills.

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<b>UNIT (#) TITLE:</b> Carpentry, Introductory Craft Skills (27202-07) – Roofing Applications [This module covers the common materials used in residential and light commercial roofing, along with the safety practices and application methods for these materials. Module content includes shingles, roll roofing, shakes, tiles, and metal and membrane roofs as well as the selection and installation of roof vents.]			<b>SUGGESTED UNIT TIMELINE:</b> <b>CLASS PERIOD (min.):</b>			
<b>ESSENTIAL QUESTIONS:</b> 1. How does safety on a roofing assignment differ from safety on other assignments? 2. What factors impact roofing installations? 3. What makes an ideal roof?						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES	CCSS LEARNING GOALS (Anchor Standards/Clusters)	CROSSWALK TO STANDARDS				
		GLEs/CLEs	PS	CCSS	OTHER	DOK
1. Identify the materials and methods used in roofing.					27202-07	Level 1
2. Explain the safety requirements for roof jobs.					27202-07	Level 1
3. Install fiberglass shingles on gable and hip roofs.					27202-07	Level 2
4. Close up a valley using fiberglass shingles.					27202-07	Level 2
5. Explain how to make various roof projections watertight when using fiberglass shingles.					27202-07	Level 1
6. Complete the proper cuts, and install the main and hip ridge caps using fiberglass shingles.				N-Q 1, N-Q 2, N-Q 3, G-CO 12	27202-07	Level 2
7. Lay out, cut, and install a cricket or saddle.				N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-BF 1, F-BF 3, F-LE 1, F-LE 5, F-TF 7, G-CO 3, G-CO 4, G-CO 5, G-CO 6, G-CO 7, G-CO 8.	27202-07	Level 2

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				G-CO 12, G-SRT 1, G-SRT 2, G-SRT 3, G-SRT 4, G-SRT 5, G-SRT 6, G-SRT 7, G-SRT 8, G-SRT 9, G-SRT 10, G-SRT 11, G-GPE 5-7, G-GMD 4, G-MG 1, G-MG 3		
8. Install wood shingles and shakes on roofs.					27202-07	Level 2
9. Describe how to close up a valley using wood shingles and shakes.					27202-07	Level 1
10. Explain how to make roof projections watertight when using wood shakes and shingles.					27202-07	Level 1
11. Complete the cuts and install the main and hip ridge caps using wood shakes/shingles.				N-Q 1, N-Q 2, N-Q 3, G-CO 12	27202-07	Level 2
12. Demonstrate the techniques for installing other selected types of roofing materials.				N-Q 1, N-Q 2, N-Q 3, G-CO 12	27202-07	Level 2
<b>ASSESSMENT DESCRIPTIONS*:</b> (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF27202-07 file or Word doc.)						
*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above (i.e., Grade Level/Course Title/Course Code, Unit #).						
<b>Obj. #</b> <b>1-12</b>	<b>INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)</b> <input checked="" type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> Experiential <input type="checkbox"/> Independent Study <input type="checkbox"/> Interactive Instruction					

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<b>Obj. #</b> <b>1-12</b>	<b>INSTRUCTIONAL ACTIVITIES: (What Students Do)</b> <b>1.</b> <b>2.</b> <b>3.</b>
<b>UNIT RESOURCES: (include Internet addresses for linking)</b>  <b>(MCCE Resource) T&amp;I DVD ROM 10</b> <b>Building Construction: Fundamentals</b> <b>CEV Multimedia</b> <b>LUBBOCK, TX, CEV MULTIMEDIA, 2003.</b> <b>DVD ROM</b> This presentation includes how to layout plates, make corners and tees, construct wall units, partitions, window and door units and headers. Step-by-step instructions are provided for cutting ceiling joists and rafters with demonstrations on proper techniques for some of the more exacting procedures (“lipping” a joist, cutting a “birdsmouth,” marking a ridgeboard and assembling the rafters) necessary for beginning builders. During completion of the 16’ X 10’ portable building, you will learn proper techniques for laying a roof with discussions and demonstrations of the following roof construction steps: laying the roof deck, attaching metal flashing along the edges, rolling out and laying the roofing felt, marking the felt to prepare it for the asbestos shingles, and cutting a nailing composition shingles in an effective method and pattern. 160 min, 4 sections, 1 printable resource and 17 Web resources. <b>(MCCE Resource) TE DVD ROM 13</b> <b>The Future of Home Construction: New Techniques, New Technologies</b> <b>Meridian Education Corporation</b> <b>MONMOUTH JCT., NJ, MERIDIAN EDUCATION CORPORATION, 2001.</b> <b>VIDEO</b> This program travels to the National Association of Home Builders’ Research Center to study four townhouses constructed using some of today’s most innovative building materials and energy-saving technologies. Filmed at each stage of construction, these houses showcase foundations made of precast, pre-insulated, high-strength reinforced concrete or insulating concrete forms; walls made of ICFs, Hebel blocks, or steel framing; exterior finishes that incorporate thermally elastic stucco; and standing seam steel roofs. Photovoltaic roofing panels, a natural gas heat pump that uses a non-CFC refrigerant, an electronic home energy management system, gas fireplaces, doors made from sawmill residue and wood scraps, a geothermal heat pump, a pellet stove, and a combined space heating and water heating system are also featured. 11 minutes.  <b>(MCCE Resource) TE DVD ROM 10</b> <b>Deconstruction: The Science of Building a House-Foundation to Roof</b> <b>Discovery Channel University</b> <b>LAWRENCEVILLE, NJ, SHOPWARE, 2004.</b> <b>DVD ROM</b> This video highlights scientific aspects of concrete, steel, wood, and nails, and the forces that impact them. Experiments done on the building site	

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and at materials testing labs investigate the strengths of concrete, rebar, and engineered lumber; the chemical properties of Portland cement and galvanized nails; and the effects of dead load and live load, torque and shear induced by wind and earthquakes, and Bernoulli's Principle as it relates to the effects of tornadoes on roofs. Microscope and infrared imaging plus animations give extra angles of insight. So do field trips to a concrete batch plant, a tree farm to study silviculture, and a saw mill to see how computerized cutting and sorting are done. 50 minutes.

**(MCCE Resource) T&I DVD ROM 1.2**

**Safety Doesn't Happen By Chance**

**Meridian Education Corporation**

**PRINCETON, NJ, MERIDIAN EDUCATION CORPORATION, 2001.**

**DVD ROM** This program provides a guide to basic construction safety concerns and practices. Topics include: Personal protective equipment, including hardhats, protective glasses and goggles, clothing, and boots; Tool safety rules and tips; Electrical safety practices, including use of ground-fault circuit interruptors (GFCIs); Hazard communication, such as material safety data sheets (MSDS); Ladder and scaffold safety. A summary of the main points concludes the program. 12 minutes.

**(MCCE Resource) T&I DVD ROM 1.3**

**Jobsite Safety**

**Shopware**

**LAWRENCEVILLE, NJ, FILMS MEDIA, 2008.**

**DVD ROM** This program illustrates the key issues residential builders and workers need to focus on in order to reduce accidents and injuries. Based on the NAHB-OSHA Jobsite Safety Handbook, the program conveys a wide range of safety information in easy-to-understand demonstrations. Topics include the use of personal protective gear, such as hard hats, gloves, and steel-toed shoes, as well as scaffolding, ladders, stairways, vehicles, mobile machinery, and other equipment. Site organization, lifting safety, electrical safety, trenching, excavation, fire prevention, basic fall protection, and hazard signage and communication are also covered. 21 minutes.