

## DESE Model Curriculum

GRADE LEVEL/UNIT TITLE: 9-12 / Carpentry — Weatherproofing

Course Code: CONSTRUCTION

### **COURSE INTRODUCTION:** 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.

The units in this course are:

1. Materials and Tools
2. Concrete and Framing
3. Weatherproofing
4. Interior Finishing

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<p><b>UNIT DESCRIPTION:</b> (3 of 4) Weatherproofing                  These lessons are designed to give students a more holistic understanding of completing the shell of a building. Classes cover sheathing of walls and roof, installing windows and doors, and protecting the finished structure from extremes in temperature and moisture.</p>	<p><b>SUGGESTED UNIT TIMELINE:</b> 4 lessons                  Lesson 1: Thermal and Moisture Protection                  Lesson 2: Windows and Exterior Doors                  Lesson 3: Roofing Applications                  Lesson 4: Exterior Finishing  <b>CLASS PERIOD (min.):</b> 90 minutes each</p>					
<p><b>ESSENTIAL QUESTIONS:</b></p> <ol style="list-style-type: none"> <li>1. Why is it necessary to protect buildings from moisture, air infiltration, and thermal exchange?</li> <li>2. How is building protection best accomplished?</li> <li>3. How do windows and exterior doors relate to weatherproofing buildings?</li> <li>4. How are doors and windows properly installed?</li> <li>5. How are different roofing materials suited for different purposes?</li> <li>6. How are different roof features covered by different methods?</li> <li>7. How are different exterior finishing materials used in different situations?</li> </ol>						
<p><b>ESSENTIAL MEASURABLE LEARNING OBJECTIVES</b>      <b>CCSS LEARNING GOALS (Anchor Standards/Clusters)</b>      <b>CROSSWALK TO STANDARDS</b></p>						
<p>1. Students will demonstrate knowledge of the terms and concepts associated with structure insulation.</p>				<p>L 9-10.1 L 9-10.6 L 11-12.1 L 11-12.6 SL 9-10.1 SL 9-10.6 SL 11-12.1 SL 11-12.6</p>	<p>27203-07</p>	<p>Level 1</p>
<p>2. Students will evaluate different types of materials used to weatherproof structures and argue their respective advantages and disadvantages.</p>				<p>RST 11-12.9 SL 9-10.4 SL 9-10.5 SL 9-10.6 SL 11-12.4 SL 11-12.5</p>	<p>27203-07</p>	<p>Level 3</p>

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				SL 11-12.6 L 9-10.1 L 9-10.6 L 11-12.1 L 11-12.6		
3. Students will identify different types of windows and exterior doors and state their uses.				WHST 9-10.2 WHST 9-10.4 WHST 9-10.10 WHST 11-12.2 WHST 11-12.4 WHST 11-12.10 L 9-10.1 L 9-10.2 L 9-10.4 L 9-10.6 L 11-12.1 L 11-12.2 L 11-12.4 L 11-12.6 RST 9-10.3 RST 11-12.3 RST 11-12.9	27109-06	Level 1
4. Students will state the steps in installation processes for windows and exterior doors.				WHST 9-10.2 WHST 9-10.4 WHST 9-10.10 WHST 11-12.2 WHST 11-12.4 WHST 11-12.10 L 9-10.1 L 9-10.2 L 9-10.4 L 9-10.6 L 11-12.1	27109-06	Level 1

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				L 11-12.2 L 11-12.4 L 11-12.6 RST 9-10.3 RST 11-12.3 RST 11-12.9		
5. Students will demonstrate their knowledge of terms associated with roofing.				L.9-10.1 L.9-10.2 L.9-10.4 L.9-10.6 L.11-12.1 L.11-12.2 L.11-12.4 L.11-12.6 RI.9-10.4 RI.11-12.4	27202-07	Level 1
6. Students will demonstrate their understanding of the various methods for safely covering roofs.				WHST 9-10.2 WHST 9-10.4 WHST 9-10.10 WHST 11-12.2 WHST 11-12.4 WHST 11-12.10 L 9-10.1 L 9-10.2 L 9-10.4 L 9-10.6 L 11-12.1 L 11-12.2 L 11-12.4 L 11-12.6 RST 9-10.3 RST 11-12.3 RST 11-12.9	27202-07	Level 1

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7. Students will distinguish among different types of exterior finishing materials.				L 9-10.1 L 9-10.6 L 11-12.1 L 11-12.6 SL 9-10.1 SL 9-10.6 SL 11-12.1 SL 11-12.6	27204-07	Level 1
8. Students will select the most appropriate finishing material for given conditions and justify the selection.				L 9-10.1 L 9-10.2 L 9-10.4 L 9-10.6 L 11-12.1 L 11-12.2 L 11-12.4 L 11-12.6 WHST 9-10.1 WHST 9-10.4 WHST 9-10.10 WHST 11-12.1 WHST 11-12.4 WHST 11-12.10	27204-07	Level 3

**ASSESSMENT DESCRIPTIONS\*:** (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)

Students will demonstrate their understanding of content and ability to apply learned skills by:

- Participating in class discussions (Formative)
- Debating with fellow students (Summative)
- Presenting information to the class (Summative)
- Writing information about windows and doors, and the related installation processes (Summative)
- Completing crossword puzzles over roofing terms (Formative)
- Writing the steps in the process of installing roofing material, including estimates and safety considerations (Summative)
- Writing justifications for their selection of materials (Summative)

**\*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 #).**

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<b>Obj. #</b>	<b>INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)</b>
1, 3, 5, 7	Direct: Instructor-led demonstrations
2, 4	Indirect/Interactive: Instructor guides students to work in teams.
6, 8	Independent Study: Instructor guides students to independently research assigned topics.
<b>Obj. #</b>	<b>INSTRUCTIONAL ACTIVITIES: (What Students Do)</b>
1, 3, 7	Reflective Discussion
2	Debates
4	Peer Partner Learning
4, 6, 8	Reading for Meaning
<b>UNIT RESOURCES: (include Internet addresses for linking)</b>	
<p>Support documents:</p> <ul style="list-style-type: none"> <li>• [DEBATE-PRESENTATION RUBRIC]</li> <li>• [WINDOW-DOOR DESCRIPTION CHECKLIST]</li> <li>• [INSTALLATION PROCESS CHECKLIST]</li> <li>• [CROSSWORD PUZZLE — ROOFING]</li> <li>• [CROSSWORD PUZZLE — ROOFING KEY]</li> <li>• [FINISHING MATERIALS RATIONAL RUBRIC]</li> </ul> <p>Internet resources:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.lowes.com/cd_Install+an+Exterior+Door_554148183_">http://www.lowes.com/cd_Install+an+Exterior+Door_554148183_</a></li> <li>• <a href="http://www.thisoldhouse.com/toh/how-to/intro/0,,218006,00.html">http://www.thisoldhouse.com/toh/how-to/intro/0,,218006,00.html</a></li> <li>• <a href="http://www.familyhandyman.com/DIY-Projects/Home-Exterior/Roofing/how-to-install-shingles">http://www.familyhandyman.com/DIY-Projects/Home-Exterior/Roofing/how-to-install-shingles</a></li> <li>• <a href="http://www.wikihow.com/Install-Roof-Tile">http://www.wikihow.com/Install-Roof-Tile</a></li> <li>• <a href="http://www.bobvila.com/sections/tv-shows/projects/14-victorian-restoration/episodes/170-skylight-installation-roofing-and-painting/videos/1094187249001-installing-standing-seam-copper-roofing">http://www.bobvila.com/sections/tv-shows/projects/14-victorian-restoration/episodes/170-skylight-installation-roofing-and-painting/videos/1094187249001-installing-standing-seam-copper-roofing</a></li> <li>• <a href="http://www.wikihow.com/Estimate-Roofing-Materials">http://www.wikihow.com/Estimate-Roofing-Materials</a></li> <li>• <a href="http://www.owenscorning.com/around/roofing/pdfs/Done_Safty_First.pdf">http://www.owenscorning.com/around/roofing/pdfs/Done_Safty_First.pdf</a></li> </ul>	

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- <http://www.mortarsprayer.com/stucco/>
- [http://homerepair.about.com/od/exteriorhomerepair/ss/siding\\_types\\_3.htm](http://homerepair.about.com/od/exteriorhomerepair/ss/siding_types_3.htm)
- <http://www.calfinder.com/library/siding/types-of-siding/clapboard-siding>
- <http://www.certainteed.com/products/vinyl-siding#>

Resources available from MCCE free loan library ([www.mcce.org](http://www.mcce.org)):

- Modern Carpentry, Building Construction  
Willis H Wagner, Howard Bud Smith, TINLEY PARK, IL, THE GOODHEART-WILLCOX CO INC, 2004. CD ROM — G-W Test Creation Software.  
This software enables an instructor to quickly create tests using a furnished test bank, or by adding their own questions.
- Building Construction: Fundamentals  
CEV Multimedia, LUBBOCK, TX, CEV MULTIMEDIA, 2003. DVD ROM — 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.