

DESE Model Curriculum

GRADE LEVEL/UNIT TITLE: 9-12 / Core — Job Skills

Course Code: CONSTRUCTION

COURSE INTRODUCTION: Core

These lessons are designed to give construction-trades students a firm skill and knowledge basis to build upon in later courses. Students will learn basic job and interpersonal skills applicable in all construction trades. Students will also be introduced to the four construction trades covered by this model curriculum: carpentry, masonry, electrical, and HVAC. Units in this course include:

1. Job Skills
2. Interpersonal Skills
3. Trade Introductions

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<p>UNIT DESCRIPTION: Job Skills</p> <p>These lessons introduce construction-trades students to the basic skills and knowledge they will need to be successful in any construction trade. Topics covered include safety, construction math, interpretation and creation of construction drawings, materials handling, rigging, and hand and power tools.</p>	<p>SUGGESTED UNIT TIMELINE: 4 lessons</p> <p>Lesson 1: Drawings Lesson 2: Math Lesson 3: Safety Lesson 4: Basic Craft</p> <p>CLASS PERIOD (min.): 90 minutes</p>					
<p>ESSENTIAL QUESTIONS:</p> <ol style="list-style-type: none"> 1. How is information presented in the various types of construction drawings? 2. How is information related from construction drawings to acts of construction and vice-versa? 3. How is math used in the construction trades? 4. What actions can be taken to prevent accidents on the worksite? 5. How are unsafe work habits/environments recognized and mitigated? 6. How are different types of materials safely and appropriately handled? 7. What are the basic methods for safely working with hand and power tools? 						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES	CCSS LEARNING GOALS (Anchor Standards/Clusters)	CROSSWALK TO STANDARDS				
		GLEs/CLEs	PS	CCSS	NCCER	DOK
1. Students will interpret information from various types of construction drawings.				L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2	00105-09 27104-06 26110-08 03401-09 28201-05 28304-05	Level 1
2. Students will relate information from real-life construction situations to construction drawings.				L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2	00105-09 28201-05	Level 1
3. Students will solve design problems using mathematical models.				N-RN 3 N-Q 1 N-Q 2 N-Q 3	00102-09 03102-07 28103-04	Level 1

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				A-CED 4 F-BF 2 F-TF 3 F-TF 8 G-CO 12 G-SRT 6 G-SRT 7 G-SRT 8 G-SRT 11		
4. Students will calculate material amounts based on construction drawings.				N-RN 3 N-Q 1 N-Q 2 N-Q 3 A-CED 4 F-BF 2 F-TF 3 F-TF 8 G-CO 12 G-SRT 6 G-SRT 7 G-SRT 8 G-SRT 11	00102-09 03102-07 28103-04	Level 1
5. Students will demonstrate their knowledge of the history and current impact of the Occupational Safety and Health Administration (OSHA).				L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2	00101-09 26102-08 26304-08 26501-09 28301-05	Level 1
6. Students will recognize unsafe work environments and practices and describe how they could be corrected.					00101-09 26102-08 26304-08 26501-09 28301-05	Level 1

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<p>7. Students will demonstrate their knowledge of the handling of different types of materials.</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 SL 11-12.6 L 9-10.1 L 9-10.6 L 11-12.1 L 11-12.6	00106-09 00109-09	Level 1
<p>8. Students will determine if a tool is safe to use and explain how to use it.</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 SL 11-12.6 L 9-10.1 L 9-10.6 L 11-12.1 L 11-12.6	00103-09 00104-09	Level 1
<p>ASSESSMENT DESCRIPTIONS*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)</p> <p>Students will demonstrate their understanding of content and ability to apply learned skills by:</p> <ul style="list-style-type: none"> • Answering questions regarding construction drawings in a class discussion (Formative) • Creating construction drawings of simple residences (Summative) • Calculating material amounts based on construction drawings (Summative) • Completing quizzes regarding the history and regulations of OSHA (Formative) • Critiquing work environments and practices for safety (Summative) • Presenting information regarding materials handling and tool usage (Summative) <p>*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 #).</p>						

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Obj. #	INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)
1, 3, 4, 5, 6, 7	Direct: Instructor lectures.
2, 3, 5	Indirect: Instructor provides materials to guide student learning.
Obj. #	INSTRUCTIONAL ACTIVITIES: (What Students Do)
1, 4	Assigned Questions
2, 3, 5	Writing to Inform
6, 7	Presentations
UNIT RESOURCES: (include Internet addresses for linking)	
<p>Support documents:</p> <ul style="list-style-type: none"> • [CONSTRUCTION DRAWING RUBRIC] • [MATERIALS ESTIMATE RUBRIC] • [VIDEO CRITIQUE RUBRIC] • [TOOL-RIG PRESENTATION RUBRIC] <p>Internet resources:</p> <ul style="list-style-type: none"> • http://www.youtube.com/CalculatedIndustries/ • http://www.oshaeducationcenter.com/osha-training/quiz.aspx • http://www.funtrivia.com/playquiz/quiz2483711c6fcf0.html • http://oshatest.net/default.htm • http://www.youtube.com/watch?v=Lx53sAiZLeM <p>Resources available from MCCE free loan library (www.mcce.org):</p> <ul style="list-style-type: none"> • Practical Problems in Mathematics for Carpenters, 8th Edition Mark Huth and Harry Huth, CLIFTON PARK, NY, DELMAR, 2006. BOOK — Text presents basic mathematical problems relevant to the construction trade, accompanied by illustrations that together give readers the opportunity to apply and practice math principles common to carpentry. 	

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- **Basic Career Math Skills: Construction**
The School Company, VANCOUVER, WA, THE SCHOOL COMPANY, 2005. DVD ROM — This program demonstrates how basic math, algebra, decimals, fractions, and geometry are used in the career world of construction. Length: 25-27 minutes.
- **Discovering Math: Concepts in Geometry**
Discovery School, SILVER SPRING, MD, DISCOVERY EDUCATION, 2005. VIDEO — This program shows the role that math plays in the design, technology, and construction of buildings, from ancient Greek architecture to modern skyscrapers. Grades 9-12. 56 minutes.
- **Estimating Building Costs For the Residential & Light Commercial Contractor**
Wayne J. DePico, KINGSTON, MA, REED CONSTRUCTION DATA, INC., 2004. BOOK — This book provides a step-by-step process for organizing the information needed to assemble an estimate. Includes a detailed look at construction specialties explaining the components, takeoff units, and labor-hours--for site work, concrete and masonry, framing, roofing, siding, finish work, HVAC, plumbing and electrical, and special construction.
- **Building Trades II Construction Estimating: Industry Standards**
Shopware, LAWRENCEVILLE, NJ, FILMS MEDIA, 2004. DVD ROM — In this program, students will learn a number of industry-standard techniques used to calculate the amounts of building materials for many common construction projects. 19 minutes.
- **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 interrupters (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.