GRADE LEVEL/UNIT TITLE: 9-12 / Masonry — Materials and Tools Course Code: CONSTRUCTION

COURSE INTRODUCTION: Masonry			
This course is designed to give students practical experience within the masonry trade. Tools, materials, and techniques are discussed and demonstrated throughout the lessons. Units within this course include:  1. Materials and Tools 2. Basic Technique 3. Specialized Technique			

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UNIT DESCRIPTION: Materials and Tools

These lessons are designed to introduce the masonry student to basic materials and tools used in the masonry trade.

Lesson 2: Mortar, Grout, and Masonry Units
Lesson 3: Metal Work and Other Reinforcement
CLASS PERIOD (min.): 90 minutes each

### **ESSENTIAL QUESTIONS:**

- 1. How do mortar and grout work with masonry units?
- 2. How are mortar, grout, and masonry units most efficiently used?
- 3. How are masonry structures most effectively used?
- 4. How is metal used in masonry?
- 5. What makes a given tool suitable for a given application?
- 6. Why are trade terms used within the masonry trade?

ESSENTIAL MEASURABLE LEARNING OBJECTIVES CCSS LEARNING GOALS (Anchor Standards/Clusters)		CROSSWALK TO STANDARDS				
	( and a standard of charter of	GLEs/CLEs	PS	ccss	NCCER	DOK
Students will demonstrate their knowledge of concepts and processes associated with mortar, grout, and masonry units.				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 11-12.9	28104-04 28105-04 28202-05 28203-05	Level 2
2. Students will demonstrate their knowledge of concepts and terms associated with masonry hardware.				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	28203-05 28204-05	Level 1

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			RI 9-10.4		
			RI 11-12.4		
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3.	Students will demonstrate their knowledge of		WHST 9-10.2	28203-05	Level 1
	processes associated with reinforcement in		WHST 9-10.4	28204-05	
	masonry.		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		
4.	Students will distinguish among tools and		L 9-10.1	28102-04	Level 1
	equipment used in masonry and select suitable		L 9-10.6		
	tools and equipment for given applications.		L 11-12.1		
			L 11-12.6		
			SL 9-10.1		
			SL 9-10.6		
			SL 11-12.1		
			SL 11-12.6		
5.	Students will describe the processes for		WHST 9-10.2	28102-04	Level 1
-	assembling and disassembling scaffolds using		WHST 9-10.4		20.0.2
	trade and lay terminology.		WHST 9-10.10		
	and and my terminology.		WHST 11-12.2		
			WHST 11-12.4		
			VVIIJI 11-12.4		

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	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

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:

- Creating infographics about mortar, grout, and masonry units (Summative)
- Creating pictorial glossaries of masonry hardware (Formative)
- Writing process guides for the installation of vertical and horizontal reinforcement, sills, and lintels (Summative)
- Participating in class discussions and games (Formative)
- Writing processes for scaffold assembly and disassembly using lay and trade terms (Formative)

\*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 #).

Obj. #	INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)
Obj. #	INSTRUCTIONAL STRATEGIES (Tesearchi-based). (Teacher Methods)
1, 2	Direct: Instructor-led demonstrations
1, 3, 5	Indirect/Independent Study: Instructor provides materials to guide student learning.
4, 5	Interactive: Instructor-led discussions
4	Experiential: Instructor-led game
Obj. #	INSTRUCTIONAL ACTIVITIES: (What Students Do)
1, 2,	Writing to Inform
3, 5	
1	Concept Mapping

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3	Assigned Questions
4	Games

### **UNIT RESOURCES: (include Internet addresses for linking)**

### Support documents:

- [INFOGRAPHIC RUBRIC]
- [PICTORIAL GLOSSARY CHECKLIST]
- [PROCESS GUIDE RUBRIC]
- [TRADE-LAY TERMS PROCESS WRITE-UP CHECKLIST]

#### Internet resources:

- Vocational Information Center, Masonry Career Guide (http://www.khake.com/page24.html)
- Mason Contractors Association of America (MCAA) (http://www.masoncontractors.org)
- http://www.masonryforlife.com/HowToBasics.htm
- www.cefga.org/documents/MasonryIllustrationsofToolsandBrickPlacementterms.ppt
- http://www.infographicsonly.com/aesthetic-and-environmental-advantages-of-stone-masonry/2086-robert-kirk-stone-masonry-01/
- http://www.wellhome.com/blog/2010/12/understanding-insulation-infographic/
- http://www.makeuseof.com/tag/awesome-free-tools-infographics/
- www.masonrysystems.org/details/missouri
- www.masonrysystems.org/knowledge/basics
- http://www.concretefasteners.com/
- http://www.strongtie.com/products/EAPR/#
- http://www.thomasrental.com/images/assembly\_scaffold.pdf
- http://www.iscaffold.com.cn/news/news\_1438.html

# Resources available from MCCE free loan library (www.mcce.org):

• Concrete Principles Resource Guide

American Technical Publishers Staff, HOMEWOOD, IL, AMERICAN TECHNICAL PUBLISHERS, INC, 2003. KIT — The Concrete Principle Resource Guide is a valuable instructional tool designed for training in group settings. The Resource Guide provides an out-of-the-box approach designed for maximum flexibility. It is divided into sections for easy use in a classroom or seminar setting. The Resource Guide includes a CD ROM with Electronic Slides of all the illustrations from the textbook and web links to valuable instructional resources on the Internet. This is a complete instructional package for teaching concrete principles.

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Building Construction: Basic Masonry
CEV Multimedia, LUBBOCK, TX, CEV MULTIMEDIA. DVD ROM — An experienced agricultural education instructor teaches equipment identification, safety and masonry techniques as he demonstrates how to build a brick wall and a block wall. Follow along as he selects the building material, sets up guide lines, mixes mortar, "butters" the bricks and blocks, lays rows and explains cleanup procedures for building these standard construction structures. He points out the consequences of poor workmanship and gives tips on how create professional-looking masonry structures. A supplement is included. 46 minutes.