MASONRY FUNDAMENTALS
Course Syllabus

Course Number: ACA-1002
OCAS Code: None
Course Length: 45 Hours
Career Cluster: Architecture & Construction
Career Pathway: Construction
Career Major(s): Construction Academy

Pre-requisite(s): None
Course Description: This course is an introduction to general masonry techniques and procedures. Students will learn about the materials used in masonry as they learn the fundamentals of creating various masonry structures. Students will also be introduced to project estimating as related to the masonry project(s) they are working on.

Textbooks:

Course Objectives:

A. Read Rules and Accurately Measure Objects.¹
   1. Identify basic measuring tools used by brick masons.
   2. Read a tape to the nearest fraction of an inch.
   3. Distinguish between modular and standard brick spacing rules.
   4. Describe procedures for reading modular and standard brick spacing rules.
   5. Measure objects.
   6. Lay out and mark course height on a story pole, using a modular spacing rule.
   7. Lay out and mark course height on a story pole, using a standard brick spacing rule.

B. List the Ingredients Used in Mortars, State the Purpose of Mortar and Mix Mortar by Hand or With a Mechanical Mixer.¹
   1. List ingredients used in mortars.
   2. State factors to consider when mixing mortar.
   3. State purposes of mortar.
   4. Select from a list factors that affect mortar consistency.
   5. Select from a list factors that influence selection of mix proportions.
   6. Arrange in order steps for using a mechanical mortar mixer.
   7. Arrange in order steps used to mix mortar by hand.
   8. State procedures used in the care of the mixer (gasoline engine).

C. Lay Brick and Use a Brick Trowel to Pick Up and Spread Mortar.¹
   1. Define terms associated with spreading mortar and laying block and brick.
2. Describe the correct way to hold a brick trowel.
3. Label methods of picking up mortar from mortarboard.
4. Explain direction of travel for placing mortar.
5. Arrange in order procedures for placing mortar.
6. Identify direction of travel for laying brick and block.
7. Label types of bedding.
9. Demonstrate the ability to:
   a. Spread mortar on a 30-inch two-by-four.
   b. Lay brick to established leads.
   c. Build a 90-degree brick lead.

D. Perform Estimations. 1
   1. Estimate materials for a specific brick job.
   2. Estimate materials for a specific block job.

E. Practice Concepts Taught in Basic Brick Work to Develop Needed Skills.
   1. Mix mortar by hand or with a mechanical mixer.
   2. Lay bricks and spread mortar.

F. Use Hand Tools to Perform Various Bricklaying Jobs. 1
   1. Explain the uses of various types of trowels, hammers, jointers, chisels, squares,
   2. Discuss safety rules pertaining to hand tools.
   3. Demonstrate the ability to:
      a. Hold a brick trowel correctly
      b. Measure, mark, and cut brick and block
      c. Use a level
      d. Use a framing square and rule to lay out a corner

G. Use Various Power Tools and a Masonry Saw. 1
   1. Label the parts of the masonry saw.
   2. Identify types of cutting blades used on masonry saws.
   3. Explain the care of the masonry saw.
   4. Discuss safety rules pertaining to the use of the masonry saw.
   5. Demonstrate the ability to:
      a. Dry cut masonry unit, using masonry saw with abrasive blade.
      b. Dry cut masonry unit, using masonry saw with diamond blade.
      c. Wet cut masonry unit, using masonry saw with diamond blade.

H. Use Rigging, Scaffolding and Miscellaneous Equipment. 1
   1. Discuss general safety rules pertaining to miscellaneous equipment.
   2. Define terms associated with scaffolds and ladders.
   3. Identify types of scaffolds.
   4. Discuss safety rules pertaining to scaffolds.

I. Identify Different Types of Brick and Block, Match Bond Types to Their Meaning, and Lay Out a Brick Wall Using Dry Bond Method. 1
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1. Name types of brick.
2. Identify brick positions as they appear in a wall.
3. Distinguish among types of bonds.
4. Identify common concrete masonry units.
5. Demonstrate the ability to lay out a brick wall using dry bond method.

J. Identify Anchors and Reinforcement and List Their Uses, Set a Bearing Plate, and Install Wall Ties.¹

1. Identify types of ties, anchors and joint reinforcement used with masonry units.
2. List principle uses for anchors and reinforcement.
3. State advantages of wall ties.
4. Describe spacing for wall ties.

¹ Mason Tender Skill Standards - Aligns with the National Center for Construction Education and Research standards

¹ ODCTE objective
² NCCER objective

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/ College Credit
The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility: The student must maintain a grade point average of 2.0 or better.