

Masonry

Course Syllabus

This course is designed to introduce the students into the world of masonry. The students will learn the proper techniques in holding and working with a trowel. They will also learn the basics of laying blocks and bricks. There will be some math as the students will need to learn how to figure square yards of concrete along with how to estimate bricks and blocks.

Along with laying block and brick, the student will experience pouring tiles with concrete and then laying tiles. They will also get to experience the concrete countertop experience.

This is an excellent hands-on class for students to experience if they have an interest in becoming a mason or working in the tile or decorative concrete industry. It will help encourage some students to go to a technical college to become a mason or decorative concrete artist and go into a lucrative field that has a tremendous shortage of workers.

There may be a shop fee depending on if the student makes tile or counters for take-home. Otherwise, there is NO shop fee with this course.

Note: Safety Glasses Must Be Worn At All Times In Shop Area!

1. **Understand and explain the purposes for studying masonry.**
 - A. Identify various careers in the field of masonry.
 - B. List possible education requirements.
 - C. List skills required of people in masonry.

2. **Understand, explain, and mix mortars.**
 - A. State purposes of mortar.
 - B. Match terms associated with mortars to their correct definitions.
 - C. List equipment used in mixing mortars.
 - D. List ingredients used in mortars.
 - E. Match types of mortars to their recommended uses.
 - F. State factors to consider when mixing mortar.
 - G. Discuss the causes and effects of efflorescence.
 - H. Demonstrate mixing reusable mortar.

3. **Identify different types of brick and block.**
 - A. Match terms associated with masonry units to their correct definitions.
 - B. Name types of brick.
 - C. Match brick sizes to their correct names.
 - D. State factors to consider when selecting brick.
 - E. Identify brick positions as they appear in a wall.
 - F. State important properties of brick.

4. Identify different types of bonds.

- A. Distinguish among the different types of bonds
- B. Label basic structural bonds.
- C. Identify common concrete masonry units.

5. Explain and demonstrate the proper use of the trowel.

- A. Explain the parts of the trowel.
- B. Explain and demonstrate proper trowel grip.
- C. Explain and demonstrate using the trowel to work the mortar.
- D. Explain and demonstrate loading mortar on the trowel.
- E. Explain and demonstrate spreading the mortar with the trowel.
- F. Explain and demonstrate cleaning excess mortar with the trowel.
- G. Explain and demonstrate tapping brick and block for alignment with the trowel.
- H. Explain and demonstrate cleaning the trowel.

6. Explain and demonstrate proper block laying.

- A. Demonstrate setting a row of blocks to a line.
- B. Demonstrate setting a one row L-Corner to a line
- C. Demonstrate setting a row of blocks to a line between two objects.
- D. Demonstrate setting two rows of blocks to a line
- E. Demonstrate setting a two row L-corner to a line.

7. Explain and demonstrate proper brick laying.

- A. Demonstrate laying a row of brick to a block edge.
- B. Demonstrate laying three rows to a string jig.
- C. Demonstrate laying three rows to an outside corner
- D. Demonstrate laying three rows to an inside corner.
- E. Demonstrate laying four rows with offset bricks
- F. Demonstrate laying a simple column.

8. Demonstrate mathematics used in masonry.

- A. Demonstrate reading a scale and recording the values.
- B. Demonstrate adding, subtracting, multiplying, and dividing common fractions.
- C. Demonstrate adding, subtracting, multiplying, and dividing decimal fractions
- D. Demonstrate calculating percentage and discounts.
- E. Demonstrate finding the area of a square.
- F. Demonstrate finding the area of a rectangle.
- G. Demonstrate finding the area of a circle.
- H. Demonstrate finding the area of a triangle.
- I. Demonstrate finding the volume of cubes and rectangular solids.
- J. Demonstrate estimating of mortar.
- K. Demonstrate estimating of bricks.
- L. Demonstrate estimating of blocks
- M. Demonstrate estimating concrete for footings.
- N. Demonstrate estimating concrete for walls.
- O. Demonstrate estimating concrete for steps.
- P. Demonstrate estimating for walks and driveways.

9. Demonstrate how to pour concrete tiles

- A. Demonstrate calculating material amount.
- B. Demonstrate mixing concrete.
- C. Demonstrate preparing the molds.
- D. Demonstrate pouring and shaking concrete.
- E. Demonstrate mold release and clean-up.

10. Demonstrate how to lay concrete tiles

- A. Demonstrate preparing the surface.
- B. Demonstrate layout lines for guides.
- C. Demonstrate gluing the tile with spacing.
- D. Demonstrate grouting.
- E. Demonstrate clean-up.

11. Demonstrate making a small countertop.

- A. Demonstrate preparing the mold.
- B. Demonstrate figuring material amount.
- C. Demonstrate proper mixing.
- D. Demonstrate pouring and shaking.
- E. Demonstrate mold release and clean-up.
- F. Demonstrate polishing process.
- G. Demonstrate finishing process.

Grading

Grading in this class will be a combination of the following three areas:

1. Quizzes covering the information in each of the units above.
2. Project and shop work (includes practice techniques in the shop).
3. Character points.

While there is little classroom time needed in learning the necessary tools, equipment, techniques, and safety to successfully lay brick and block, most of the time in this course will be spent in the shop with actual work practice.

We do have to complete some bookwork so there will be some quizzes covering bookwork.

Obviously the students will be graded on their ability to lay brick and block in a safe and efficient manner, using the correct tools and techniques.

The students will also be graded on a tile project and a countertop project.

Character points are given each and every week. (See Expectations Sheet to see what falls into the character category.)

I use a TOTAL points system to keep it simple for the students to figure their grades and where they are standing in my class.

I use the average of the first 9 weeks and the second 9 weeks to figure the semester grade.

Character points are worth 30 points per week. Again, looking at the expectations sheet, if the student adheres to the expectations of the class...they will benefit tremendously from these points. If the student does not adhere...they will find that their grade will suffer as a result.

I CANNOT STRESS ENOUGH THE IMPORTANCE OF PRACTICING GOOD SAFETY AND CHARACTER IN MY CLASS. WEARING SAFETY GLASSES AND FOLLOWING EXPECTATIONS ARE A HUGE PART OF YOUR GRADE!

Student Safety & Expectation Pledge Form

_____, on this date _____
Student Name – Please Print

Pledges to follow expectations and shop safety, equipment safety, tool safety, and finishing chemical safety in Mr. Hamilton's shop area and has his/her parents written permission to participate in activities that meet the above criteria.

It is understood that each student will be given proper instruction through lectures, demonstrations, written quizzes, and any other means necessary to teach proper use of and safety of equipment and tools. The student must assume responsibility for the following safe practices, and I therefore ask that he/she subscribe to the following safety pledge:

1. I promise to follow all expectations for Mr. Hamilton's class and shop area.
2. I promise to never use a machine without first having permission from the instructor.
3. I will not ask permission to use a particular machine unless I have been instructed in its use and have scored 100% on the safety test for that machine.
4. I will not operate any machine unless the teacher is in the shop.
5. I will report any accident or injury (no matter how minor) to the teacher immediately.
6. I will report any breakage of equipment or tools to the instructor immediately.

Date: _____ Student Signature: _____

I hereby give my consent to allow my son or daughter to operate all machines and equipment necessary in carrying out the requirements of the course in which he/she is enrolled. I also understand Mr. Hamilton's expectations and the consequences for my son/daughter if those expectations are not met. I have also read the course syllabus and I understand Mr. Hamilton's grading procedure.

Date: _____ Parent Signature: _____

Parent's email address: _____

(I would really appreciate a contact email address so that I can keep you informed of any concerns I might have in regards to grades or the behavior of your son/daughter.)