

PHCC Educational Foundation
E-Learning
Plumbing 201 Syllabus

Primary Course Contact

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Office Hours: 9:00 a.m. to 3:00 p.m. ET Tuesday through Thursday.

Prerequisites

Plumbing 101 or equivalent

Welcome to the PHCC Educational Foundation's Plumbing Online Apprenticeship-Related Instruction Program!

This program is designed to provide students who cannot attend classes in a traditional apprentice program with the same opportunity to learn the textbook fundamentals of the trade. This training course must be supplemented by your employer, through both technical assistance and on-the-job training in each area of instruction in the book.

Course Goals

- To familiarize students with water distribution systems
- To familiarize students with sizing of water distribution and DWV systems
- To provide students with an understanding of mathematical concepts necessary for plumbing work
- To provide students with an understanding of trade drawing and sketching techniques
- To introduce students to venting systems
- To introduce students to safety concepts for typical plumbing work

Course Policies and Instructions

It is the student's responsibility to ensure that this course is an acceptable form of apprenticeship training in his/her state.

The student must complete the enrollment form and pay for the course before a program can be delivered.

To maintain continuity, it is recommended that at least one unit be completed and one test be submitted each month. **There is a maximum time limit of 12 months to complete the program.** Exceptions to the time limit may be made at the discretion of the Director of Apprentice & Journeyman Training.

The student is solely responsible for completing his or her work in a timely manner and for requesting any extensions for completing the course. Students who have not submitted a unit test

in 60 days will receive a warning notice by mail requiring them to complete a minimum of one unit test within 30 days to remain active in the program. Students failing to submit a unit test for 90 consecutive days will be dropped from the program. If the student is dropped from the program, the student forfeits all money paid for the program and receives no credit for the portion completed.

Students in good standing (with an average test grade of 70% or higher) dropped from the program may reinstate their registration and resume studies within 6 months of the date dropped by paying a \$100 reinstatement fee.

No refunds are available on this course.

All tests are closed-book and are taken on the honor system. Students are expected to submit original work at all times. Any answers on a test that are verbatim from the textbook will be marked incorrect and no credit will be given. Students violating this policy are subject to removal from the program at the discretion of the PHCC Educational Foundation. All students removed from the program are ineligible for refunds and may not be reinstated in the program under any circumstances.

On-the-job training must be coordinated with the student's employer. **On-the-job training is the responsibility of the apprentice and his/her sponsor.** The apprentice and employer are responsible for maintaining accurate records of on-the-job training and supplying those to the appropriate state apprenticeship agency as required in the state where the apprentice is registered.

Due to varying state requirements for licensing, students are limited to enrollment in one course per calendar year. Exceptions may be made on a case-by-case basis. Requests for waivers to this policy must be made in writing to: Merry Beth Hall, Director of Apprentice & Journeyman Training, PHCC Educational Foundation, 180 S. Washington St., Ste. 100, Falls Church, VA 22046.

Course Requirements & Grading

In order to successfully complete this course, each student must complete all assignments including:

- Reading assignments
- Three discussion board assignments
- One drawing assignment
- One math pre-test
- Nine unit tests
- One final exam

Online tests need instructor review and will be graded and returned within 7 days from the date submitted. In the case of tests or assignments with drawings, please allow up to 30 days for tests to be graded and returned. If you have not received your graded test within 30 days, please contact us at 800-533-7694 or by email at vasquez@naphcc.org.

Please note that online tests may show an answer as incorrect when it is actually correct. This occurs with fill in the blank and short answer questions. The software is not intuitive and spelling errors or verbiage not exactly like the answer key trigger the software to mark an answer wrong when it is not. The instructor will review all tests to override the software errors so your grade is correct. Please allow up to 7 days from the date submitted for the instructor to review your test.

Students and their employers are responsible for maintaining records for on-the-job training as required by the state in which they are regulated. Upon request, the PHCC Educational Foundation will provide student progress reports on the home study (apprenticeship-related instruction) portion of the apprenticeship to the appropriate state licensing entity.

All assignments must be completed in order to finish and pass the course.

Students are required to achieve a passing grade of 70% on each test. In the case of a score lower than 70%, a test may be re-taken after the student reviews the unit again and is prepared to re-take the exam. Students must contact the instructor to re-take the exam (vasquez@naphcc.org) and must wait at least 10 days from the previous attempt before re-taking the exam.

A certificate of completion will be awarded for completion of the program with a minimum 70% grade.

Grades will be calculated based on a total of 450 possible points, meaning that a student must earn at least 315 points to successfully complete the course. However, please note above that students must score a 70% on each test in order to pass that component of the course. Unit tests are worth 25 points each, so 17.5 out of 25 must be scored in order to pass a unit test. Weighting of course assignments and tests is as follows:

Discussion board assignments (3) - 15 points each (45 points total)
Drawing assignment (1) - 30 points
Math pre-test (1) – 50 points
Unit tests (9) - 25 points each (225 points total)
Final exam (1) - 100 points

Required Textbooks

PHCC Educational Foundation Plumbing Apprentice & Journeyman Training Committee (2015). *Plumbing 201*, 6th ed. Clifton Park, NY: Delmar, Cengage Learning.

Plumbing-Heating-Cooling Contractors -- National Association (2012). *2012 National Standard Plumbing Code - Illustrated*. Falls Church, VA: PHCC.

Assignments

In order to stay on track for course completion within 12 months, students are expected to complete one unit per month.

Unit 1 - Installation Practices

Read Chapters 1-3 in the *Plumbing 201* textbook.

Test #1: Once you have studied the content of Chapters 1 through 3 and are prepared to take a test, you may take the Unit 1 Test by clicking on the link at the bottom of this page. Once you start the test, you may not leave it and come back later. You must complete it at that time. Make sure you have enough time to finish the test before starting it! Please note that all tests in this course are **closed-book tests**. As with any academic program, it is expected that you will complete each test without any outside assistance. You are on the honor system.

Discussion Board Assignment #1: Select one of the following nonpotable piping systems: radiant heat; snow melting systems; geothermal ground source systems; ice rinks; freezer warehouses; water source heat pumps; gas piping, under slab warm air duct; or chilled water cooling systems. Research the type of piping used for this application, common locations for installation, and list several manufacturers specializing in this type of product.

Unit 2 - Joining Methods

Read Chapters 4-5 in the *Plumbing 201* textbook. Ask your supervisor to give you opportunities to practice properly joining the various types of piping in the field. Have your supervisor check your work and make recommendations for improvement where needed.

Video - [Brazeing](#)

Discussion Board Assignment #2: Search the Internet and identify two specific safety concerns related to either welding, soldering, or brazing. Discuss those safety concerns and what precautions may be taken. Be sure to cite your source (list the Web site). All assignments must come from different sources - you may not use the same source as another student, so check your fellow students' posts on this discussion board before you post your information to be sure it is not a duplicate.

Test #2: Once you have studied the content for this unit and are prepared to take a test, you may take Unit Test 2 by clicking on the link at the bottom of this page. Again, this is a closed-book test and you may not receive any outside assistance to complete it.

Unit 3 - Installation Practices - Water Distribution

Read Chapters 6-8 in the *Plumbing 201* textbook.

Test #3: Once you have mastered the content of this unit and are prepared to take a test, click on the link below to take Unit Test 3. This is a closed-book test!

Unit 4 - Installation Practices - DWV

Read Chapters 9-13 in the *Plumbing 201* textbook.

Video - [Backflow Prevention & Cross-Connection Control](#)

Video - [Excavation and Trenching](#)

Video - [Septic System](#)

Discussion Board Assignment #3: Search the Internet for recent (within the last 10 years) cases of illness and/or death brought on by a cross-connection. Discuss one incident, noting where it occurred, what failure caused the cross-connection, how many people were made ill or died, and what chemical entered the potable water supply. What measures were taken by responsible parties to ensure a remedy to the problem and prevention of future occurrences?

Test #4: Once you are prepared for the test on this unit, click on the Unit 4 Test link at the bottom of this page. No outside assistance!

Unit 5 - Plumbing Mathematics

Read Chapters 14-15 in the *Plumbing 201* textbook. Complete the review questions in the textbook for practice. An answer key is provided in Appendix B of the textbook.

Scroll to the bottom of this page for the Plumbing 201 Math site link from Cengage Learning. Click to launch the program. Follow the Plumbing 201 Math System Tutorial (attached at top of this page) to learn how to log in to the system and navigate the topics you need to cover. You must log in and enter the Learning Code LCORIZPGLG to enter the course site for Plumbing 201 the first time you log in. You are responsible for reviewing and mastering all of the content in the following math subject areas:

Number Sense (Roots)

Fractions

Decimals

Measurement

Converting Measures

Operating with Measures

Geometry (Circles, Triangles, Pythagorean Theorem, Quadrilaterals)

When you have reviewed these items, please **complete the Unit 5 Pre-Test** (listed under the Tests heading on the external course site). This is worth 50 points. You have up to three attempts to get the best grade possible on this assignment.

Suggested Resource: If you are having difficulty with any of the math concepts in these chapters, visit You Tube for videos demonstrating how to make various calculations. Many videos are available.

Test #5: Once you have studied the content for this unit and are prepared to take a test, you may take Unit Test 5 by clicking on the link at the bottom of this page. Again, this is a closed-book test and you may not receive any outside assistance to complete it.

Unit 6 - Related Science & Venting

Read Chapters 16-17 in the *Plumbing 201* textbook.

Video - [Water Hammer](#)

Test #6: Once you have mastered the content of this unit and are prepared to take a test, click the Unit 6 Test link at the bottom of this page. This is a closed-book test!

Unit 7 - Installation Practices

Read Chapters 18-20 in the *Plumbing 201* textbook.

Test #7: When you are prepared to take the Unit 7 Test, click on the link at the bottom of this page. As always, this is a closed-book test.

Unit 8 - Safety Practices

Read Chapters 21-22 in the *Plumbing 201* textbook.

Video - [Ladder Safety](#)

Test #8: Click the link below to complete the Unit 8 Test.

Unit 9 - Blueprint Reading & Construction Drawings

Read Chapters 23-24 in the *Plumbing 201* textbook.

Test #9: Click the link below to complete the Unit 9 Test.

Drawing Assignment: Interpret the rough-in sheets provided (links at the top of this page). List the rough-in dimensions requested on the Drawing Assignment Answer Sheet link at the top of this page and submit your assignment to the instructor at vasquez@naphcc.org.

Final Exam

Review all of the previous units and tests. When you are prepared, click the link below to take the final exam.