

**PHCC Educational Foundation**  
**E-Learning**  
**Plumbing 301 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 and 201 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 fixtures and appliances
- To familiarize students installation methods for fixtures and appliances
- To provide students with an understanding of blueprints, drawing types, and plumbing plans
- To introduce students to fuel gas piping systems and appliances
- To introduce students to advanced mathematical concepts used in plumbing work
- To provide students with an understanding of electrical concepts related to 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
- Eight 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](mailto: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](mailto: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) - 20 points each (60 points total)  
Drawing assignment (1) - 40 points  
Math pre-test (1) – 50 points  
Unit tests (8) - 25 points each (200 points total)  
Final exam (1) - 100 points

### **Required Textbooks**

PHCC Educational Foundation Plumbing Apprentice & Journeyman Training Committee (2008). *Plumbing 301*, 3rd ed. Clifton Park, NY: Delmar, Cengage Learning.

National Fire Protection Association & American Gas Association (2009). *National Fuel Gas Code*. Quincy, MA: National Fire Protection Association.

### **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 1-6 in the *Plumbing 301* textbook.

Discussion Board Assignment #1: Discuss in detail one of the pre-planning, prefabrication, or profitability practices used by your employer. While not giving away proprietary information, what do you do on a daily basis to help make these practices a success for your employer? In what areas might you suggest improvement for your employer?

Test #1: Once you have studied the content of Chapters 1 through 6 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.

## **Unit 2 - Blueprint Reading**

Read Chapters 7-9 in the *Plumbing 301* textbook.

Video - [Reading Plans](#)

Drawing Assignment: Interpret the floor plan for the office remodeling project found in the insert in the back of the *Plumbing 301* textbook. Complete the two Drawing Assignment sheets linked at the bottom of this page and submit your assignment to the instructor at [vasquez@naphcc.org](mailto:vasquez@naphcc.org).

Test #2: Once you have studied the content for this unit and are prepared to take a test, you may take the Unit 2 Test 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 - National Fuel Gas Code**

Read Chapters 10-13 in the *Plumbing 301* textbook. When needed, review applicable sections of the *National Fuel Gas Code*.

Video - [Fuel Gas Pipe Purgings](#)

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 - National Fuel Gas Code**

Read Chapters 14-17 in the *Plumbing 301* textbook. When needed, review applicable sections of the *National Fuel Gas Code*.

Discussion Board Assignment #2: List the name of the fuel gas code used in your area. If more than one, please select the one you use most often. List the acceptable materials for fuel gas piping and venting in your local code. Are these different from the materials listed in the National Fuel Gas Code? Why do these differences exist?

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 - Surveying Instruments**

Read Chapters 18-20 in the *Plumbing 301* textbook.

Video - [Setting Up a Builders Level](#)

Test #5: Click the link at the bottom of this page to take the Unit 5 Test. Again, this is a closed-book test.

### **Unit 6 - Mathematics**

Read Chapters 21-24 in the *Plumbing 301* textbook.

Video - [Offset Introduction](#)

Video - [45 Parallel Offsets Using Constants](#)

Video - [Calculating Tank Capacity & Volume](#)

Scroll to the bottom of this page for the Plumbing 301 Math site link from Cengage Learning. Click to launch the program. Follow the Plumbing 301 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 LCAI4RBLI to enter the course site for Plumbing 301 the first time you log in. You are responsible for reviewing and mastering all of the content in the following math subject areas:

Ratios & Proportions

Measurement - esp. Volume

Converting Measures - esp. Units of Capacity

Geometry - esp. Triangles, Pythagorean Theorem

When you have reviewed these items, please **complete the Unit 6 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.

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 - Related Science**

Read Chapters 25-27 in the *Plumbing 301* textbook.

Video - [Coefficient of Thermal Expansion](#)

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 - Electricity**

Read Chapters 28-31 in the *Plumbing 301* textbook.

Discussion Board Assignment #3: Find the nameplate on an electric water heater. List the brand and model of the water heater as well as the items and values listed on the nameplate. Discuss how this information can be used to help you troubleshoot problems with the water heater.

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

### **Final Exam**

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