



Course Name	Water Heaters
Credit Hours	4 Hours
Instructor(s)	Randy Drake
Fee	\$40.00

Course Description

This class provides four hours of content on topics central to the plumbing trades. It consists of a comprehensive course of study on all aspects of residential water heaters.

Learning Objectives

At the completion of the course, students will be able to:

- Gain an appreciation for the mechanics and physics of water heaters;
- Select, install, and maintain water heaters armed with enhanced knowledge;
- Better advise customers on options, including alternative and “green” appliances; and
- Follow the best current practices on protecting residents from temperature problems and from harmful microbial infestations.

Equipment Requirements

You must have an active, working internet connection to access this course online, as well as a platform to access the internet, such as a computer, tablet, or phone. All popular web browsers are supported, including Google Chrome, Mozilla Firefox, Safari, and Opera. No specialized software, speaker, microphone, or web camera is required.

Schedule and Location

This course is available online at any time at www.TradesmanCE.com. Upon enrolling in the course, students will have access for 365 days or until the agency-issued course expiration date, whichever comes first. After the access expiration date, the student may re-activate their course if the course approval has not expired. If they do not re-activate, the course will be removed from the student’s account and any progress in the course will be lost. Before the access expiration date, the student may sign in and out of the course as many times as needed to complete the course.

Student Support

Both general and technical support is available to the student before, during, and after taking the course online. Students have access to general customer support via phone, chat, and email.

Students have access to the course instructor via email. All questions, concerns, and comments received will be responded to within one business day.

Participation/Interactivity Verification

Timed Logs - Per our company's record retention policy, each student's every log-in, log-out, and lesson/assessment completion time is tracked and retained as part of the student record.

Review Questions - After each section of text, students must answer a review question. Students cannot progress in the course until the question between sections has been answered correctly.

Global Timer - Students will not get credit until they spend a minimum of 200 active minutes total in the course.

Identity Verification

Unique Username/Password - Each student that wants to complete a training course with us must create an account by registering a unique personal email address and password. The student must enter this unique identifier every time they take a break from the course.

Assessment Details

Review Questions - The licensee must complete all multiple-choice questions between sections correctly to get credit for the course. If their first response is incorrect, students will have to try again until they choose the correct answer.

Water Heaters Timed Outline

Section	Title	Questions	Minutes
1	Introduction to Class on Residential Water Heaters	1	4.1
2	Types of Water Heaters		4.6
	a. How a Direct-Fired Automatic Storage Water Heater Works		1.4
	1. Controls		3.3
	2. Stratification		1.9
	3. Condensation and Overflow Water		4.9
	4. Venting		1.8
	5. Cathodic Protection	1	6.0
3	Code & Standards		4.4
	a. Significant Code Provisions for Water Heater Installation		0.4
	1. 2015 UPC Section 507.13 - Installation in Garage		3.3
	a. A Note on FVIR		6.8
	2. 2015 IPC Section 504.6 - Requirements for Discharge Piping		4.9
	3. 2015 IPC Section 504.7 & 2015 UPC Section 507.5 - Drainage	1	11.9
4	Pressure		2.3
	a. Safety Features		3.2
	1. T&P Relief Valves		6.8
	2. Expansion Tanks		7.1
	a. Installation	1	4.4
5	Water Heater Sizing		0.0
	a. Information Gathering		5.3
	b. Sizing Methods		1.1
	1. Method 1: Average Hourly Demand		2.1
	2. Method 2: Occupancy Type		4.0
	3. Electric Water Heater Calculation		2.8
	c. Conclusion	1	2.7
6	Temperature Maintenance		1.0
	a. Codes		6.1
	1. Optimal Temperature for Hot Water		2.5
	b. History of Hot Water		4.7
	1. Thermostatic Mixing Valves		4.1
	2. Domestic Hot Water Recirculation and Self-Regulating Heat-Trace Systems		5.7
	a. Sample Code	1	3.1
7	Thermal Shock and Scalding		5.9
	a. How to Prevent Thermal Shock and Scalding		5.0
	1. Replacements and Alterations		4.3
	b. Conclusion	1	1.1
8	Best Practices	1	2.0
9	Hydronic Heating		4.1
	a. Codes		2.4
	1. Protection of Water Supply		1.5

	2. Mechanical Code Provisions	1	5.8
10	Green Water Heater Systems		3.0
	a. Enhanced Water Heater Efficiency		5.1
	1. Water Conservation		2.5
	2. Heat Recovery and Heat Traps		4.6
	3. Geothermal		4.6
	4. Demand Hot Water Recirculating Systems		4.7
	b. Solar Water Heaters	1	5.7
11	Nasty Microbes		2.5
	a. What is Legionnaires' Disease?		3.8
	b. Temperature Settings and Bacterial Development		2.2
	1. Where Legionella May Propagate in the Water Heater System		2.3
	2. Other Methods of Controlling Legionella		3.0
	a. Prevention Checklist	1	2.1
12	Best Practices		3.7
	a. Helping Select the Water Heater		5.7
	1. Alternate Water Heaters		4.3
	b. Expansion Tanks		4.7
	c. Maintenance		4.3
	d. What to Do About DIY Plumbing	1	5.5
13	End of Class	1	2.4
	Totals:	13	237.5
	Student Minimum Time Required:		200