



Program Description

Program Name: Plumbing Training - C

Course Fee: \$480.00 (Check for promotions, if any, on our Home Page button: CURRENT PROMOTIONS)

You are entitled to a 15% discount if you pay the course price in full (\$408.00 instead of \$480.00)

Note: The program fee includes the necessary textbook - provided to students in USA at no additional cost.*

Standard Time to Complete Course:** 266 hours

Professional Development Hours (PDHs):** 266.0 hours

Continuous Education Units (CEUs): 26.6

Access Allowed to the Course after Registration: 365 days

Instructor: Houston Industrial Training Institute Staff

7 Calendar Days, No Questions Asked Refund Policy

We are committed to provide a zero-risk learning opportunity for prospective students. To this end, we will issue a full refund on monies paid by a student if a refund is asked for within seven calendar days of payment. This applies to all monies paid during the preceding 7 calendar days. Please note that no refund is allowable if the completion certificate has been made available to the student or if more than 7 calendar days have passed.

Notes:

*Students outside the USA may have to cover shipping & handling charges for the textbook.

** Note: The program consists of a number of Learning Modules – all of them are listed below with the standard completion time. The standard-completion-time number shown here is the sum of standard completion time for all of the modules. The standard learning-module completion time is based on the average of time taken by actual or study-group students or our judgment in this matter. The standard module-completion time assessment excludes breaks of any kind. Depending upon the experience and educational background of a particular student, the actual time taken by a particular student may be more or less than what is noted here. We give credit for PDHs and CEUs per information provided in this document, and NOT the actual time taken by a particular student.



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Who is this course for?

This course is meant for people who seek a good grasp of basic technical aspects of the subject technology at the technician level. The program is based on US technical practices and covers a wide range of foundational subjects.

Any person who can use email will be able to participate in this program – no additional skills are required. This is a broad-based program – with a focus on the underlying technology. A career in this field will most likely require you to meet certain licensing, training, and other requirements that can vary by vocation and state. You should check with your state, local government and/or licensing board to find out the requirements may be applicable to you.

The following career-related information (from US Department of Labor) is provided strictly for your information, planning and reference.



Occupational Employment Statistics

Occupational Employment and Wages, May 2014

47-2152 Plumbers, Pipefitters, and Steamfitters

Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinklerfitters.

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
372,570	1.2 %	\$26.26	\$54,620	0.5 %

Course Structure

This program consists of a number of learning modules. The beginning (or earlier) modules are self-sufficient and no additional textbooks are required. For the later modules one or more textbooks are necessary – **we provide all of the necessary textbooks at no cost to the student.** The textbook is shipped out to the student well before it is needed.



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- a. The course provides industry-ready information in a manner that allows almost anyone, with any background, to participate in it. Unlike regular classroom-based learning, this course allows a user to go over the learning materials a number of times and write the test a number of times – this results in exceptionally high quality of learning.

- c. To augment learning, in many learning modules animations and simulations are provided – allowing the students to interact with the learning materials and get a feeling for the dynamism of technical or scientific concepts.

- d. The program consists of a number of learning modules. Each of the modules consists of learning materials as well as a written test. To pass the course a student has to pass each of the modules. The pass mark is 75%. After going through the learning materials, the student is expected to email the answer sheets for evaluation.

- e. Where necessary, the online modules provide you with a listing of reference material – in case you want to build a personal library or want to do additional research.

Note: Please do not share our course material with others and do not use it for any commercial or professional application. Under all circumstances we maintain copyright to all of the material presented in the course.

Course Availability: Anytime, from anywhere. This is a totally web-based online course – no physical classroom attendance is required. Prospective students may enroll at anytime from anywhere. Also, students can start and participate in the course at anytime from anywhere.

Course Pre-requisites: Our courses include all of the necessary math and science material relevant to the course. Any person who can use email will be able to participate in this course – no additional skills are required.

How to Register: Visit our Home Page www.HoustonIndustrialTraining.com Please click on the REGISTER button located on the left hand panel. In addition, feel free to ask for clarifications and help by via email: Registrar@HoustonIndustrialTraining.com. Additional informatory material is available via How-To Guide button located on our Home Page.

Help for Registered Students: Students can ask for help at any time via email. Send an email to instructor@HoustonIndustrialTraining.com. In your email, please include your name, your Student Code, your course name, your phone number and your email address. Our aim is to respond to students within two working days.

Third Party Commercial Interest Disclosure Policy



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We do not allow anyone, including the instructors, to solicit any business from the students other than HITI products. Further, no instructor is allowed to present any third party products or software or events to the students. HITI does not allow any third-party compensation related to the learning events or programs.

Required Equipment

1. An ordinary PC (not older than five years).

Note: We do not test our courses on computers other than PC. We have found most of our clients are able to use other computers successfully. If your computer is not a PC, we encourage you to take our FREE sample course to ensure your hardware is compatible with our delivery system. We ask you to do this test BEFORE registering for the course.

2. A good Internet connection. We design most of our instruction pages to download in less than five seconds. Some of the graphics-heavy pages may take longer to download.
3. Adobe Flash Player. Almost all PCs come equipped with this Flash Player. If your computer does not have it, you can download it for free from www.adobe.com.

Notes:

** Note: The course consists of a number of Learning Modules – all of them are listed below with the standard completion time. The standard-completion-time number shown here is the sum of standard completion time for all of the modules. The standard learning-module completion time is based on the average of time taken by actual or study-group students or our judgment in this matter. The standard module-completion time assessment excludes breaks of any kind. Depending upon the experience and educational background of a particular student, the actual time taken by a particular student may be more or less than what is noted here. We give credit for PDHs and CEUs per information provided in this document, and NOT the actual time taken by a particular student.

Professional Development Hours (PDHs) are equal to the standard learning-module completion time. The corresponding Continuing Education Units (CEUs) are obtained by dividing the standard time by ten.

Listing of Learning Modules included in the Program



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Basic Industrial Safety

Standard Time to Complete: 6 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** why paying attention to safety is important in an industrial plant.
2. **DESCRIBE** employer and employee responsibilities in reference to personnel safety.
3. With reference to an industrial plant, **IDENTIFY** common hazards and possible protection against them.
4. **EXPLAIN** why special attention is paid to hazards associated with Hydrogen Sulfide gas.
5. **DESCRIBE** safety hazards posed by electricity, confined spaces and toxic gases.
6. **SELECT** basic protective equipment for common hazards in an industrial plant.



Basic Hazard Communication

Expected Time to Complete: 10 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** the purpose and the key elements of the Federal Hazard Communication Standard (HCS). You will also be able to **IDENTIFY** other common names used to refer to this standard.
2. **DESCRIBE** how a hazardous chemical is identified in a workplace.
3. **DESCRIBE** the purpose and what is meant by the term MSDS. You will also be able to describe the key elements of an MSDS. Using MSDSs, you will also be able to **SELECT** appropriate protective measures when handling chemicals.
4. **DESCRIBE** the nature of the NFPA and HMIS/HMIG hazard communication methods. You will also be able to **DESCRIBE** what is meant by the terms TLV, PEL, TWA, Acute Effect, Acute Toxicity, Chronic Effect, Chronic Toxicity, Carcinogen, Flammable Liquid, Combustible Liquid, and Chemical Reactivity.
5. **DESCRIBE** the nature of the DOT methods for hazard chemical identification.
6. **DESCRIBE** the necessary training activities required to comply with the Federal Communication Standard (HCS.)



Basic Lockout-Tagout

Standard Time to Complete: 10 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** the key reasons for implementation of lockout-tagout procedures.
2. **DESCRIBE** what is meant by the term “energized equipment.” You will be able to list various ways by which equipment “energized state” can occur.
3. **DESCRIBE** under what conditions lockout-tagout procedures are required. You will also be able to **DESCRIBE** the employer’s responsibilities for implementation of such procedures.
4. **DESCRIBE** the training requirements prescribed by OSHA for lockout-tagout procedures. You will also be able to **DESCRIBE** the prescribed worker training requirements under OSHA’s regulations.
5. **DESCRIBE** the key items that need to be considered for electric power lockout-tagout systems. In reference to the electrical requirements, you will be able to **DESCRIBE** what is meant by the term “qualified employees;” you will also be able to **DESCRIBE** the responsibilities of such employees.
6. **DESCRIBE** the ten general procedural steps, outlined in the learning module, for implementation of Lockout-Tagout Procedure.

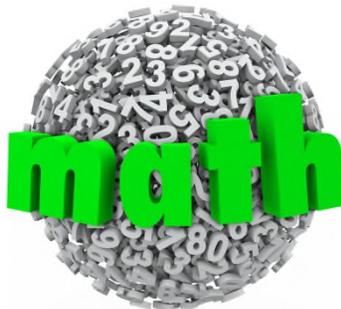


Math for Technicians and Operators

Standard Time to Complete: 20 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:



1. **ADD, MULTIPPLY, DIVIDE, and SIMPLIFY** fractional numbers; you will also be able to **ADD, MULTIPPLY, DIVIDE, and SIMPLIFY** decimal numbers; you will also be able to **CONVERT** fractional numbers into decimal numbers and vice versa.
2. **CALCULATE** areas and volumes of simple figures.
3. **MANIPULATE and WORK WITH** simple equations.
4. **CREATE** graphical representations of two-dimensional numeric relationships.
5. **CALCULATE** percentage values of simple quantities.
6. **CONVERT** one measurement unit into another measurement unit.



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Physics for Technicians 1

Standard Time to Complete: 20 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** what is meant by the English and the SI measurement systems. You will also be able to **STATE** some common conversion factors.
2. **DESCRIBE** what is meant by the terms: mass, weight, matter, weight density, and specific gravity.
3. **DESCRIBE** what is meant by the terms: Buoyancy, and Archimedes' principle.
4. **DIFFERENTIATE** between heat and temperature. You will also be able to **DESCRIBE** the following concepts: Fahrenheit scale, Celsius scale, Rankine scale, and Kelvin scale. You will also be able to **CONVERT** a given temperature in any scale to any of the three other scales.
5. **DIFFERENTIATE** between the terms sensible heat and latent heat. You will also be able to **DESCRIBE** the terms: thermal conductivity, heat convection, heat radiation, and heat conduction.
6. **DESCRIBE**, using latent heat concepts, how water at room temperature is converted into superheated steam.



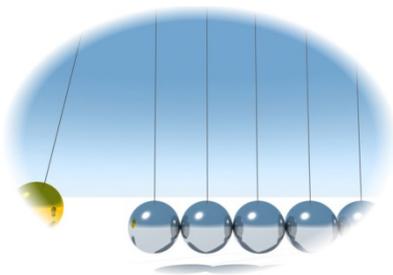
Physics for Technicians 2

Standard Time to Complete: 20 hours

Learning Outcomes:

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** the meaning of and **DIFFERENTIATE** between the terms: Mass, weight, and energy. You will also be able to **DIFFERENTIATE** between various types of energy such as potential energy, kinetic energy, electrical energy, thermal energy, etc.
2. **DESCRIBE** how pressure is exerted by various forms of matter, and **DIFFERENTIATE** between various forms of pressure measuring units such as psig, psia, inches of water, head, inches of mercury – pressure, inches of mercury – vacuum, etc.
3. **DESCRIBE** how gases exert pressure. You will also be able to **DESCRIBE** the three gas laws, including the ability to use the formula $PV=RT$ to calculate any of the variables, provided the other variables are given.
4. **DESCRIBE** how liquids exert pressure and what is meant by static pressure and how it varies according to the liquid depth.
5. **DESCRIBE** the nature of a manometer and how it can be used to measure pressure and vacuum.
6. **DESCRIBE** what is meant by the term “Vapor Pressure” and how it varies with liquid



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temperature.

Electrical Safety

Estimated Time to Complete: 20 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **IDENTIFY** the key components of a basic electric circuit. You will also be able to **EXPLAIN** the function of key components of a basic electric circuit.
2. **DESCRIBE** the common hazards posed by electricity. You will also be able to **STATE** the protective measures that should be taken by workers and electricians.
3. **DESCRIBE** what is meant by the term “grounding,” and how it is accomplished.
4. **DESCRIBE** how an improperly grounded system can become hazardous for workers.
5. **DESCRIBE** how a properly grounded system works and provides safety for workers and electricians. You will also be able to **DIFFERENTIATE** between a Service Ground and an Equipment Ground.
6. **DESCRIBE** how a Ground Fault Current Interrupter (GFCI) works and provides safety.



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PlumbingTechnology1100 - Drainage Sewer and Vent Systems

Standard Time to Complete: 40 hours



Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** fundamentals of the following terms: meaning of simple plumbing isometrics, public sewer building sewer, building drain, fixture drain, waste pipe, and soil stack.
2. **DESCRIBE** what is meant by the terms: vent system, battery venting, branch vent, circuit vent, common vent, continuous vent, dry vent, individual vent, loop vent, the main vent, relief vent, side vent, stack vent, vent header, vent stack, wet vent, and yoke vent. You will also be able to **DESCRIBE** common problems that may be created due to inadequate venting.
3. **DESCRIBE** what is meant by the terms building traps and fixture traps. You will also be able to **DESCRIBE** the basic installation concepts relating to building traps and fixtures.
4. **DESCRIBE** the main causes for drain pipe clogging. You will also be able to **DESCRIBE** common requirements pertaining to location of cleanouts.
5. **DESCRIBE** the purpose of interceptors or separator traps. You will also be able to **DESCRIBE** the basic concepts relating to interceptors and separator traps.
6. **DESCRIBE**, in reference to drainage and vent pipes, what is meant by "approved material", and what does a plumber need to do should he/she is not able to procure a pipe made of approved material. You will also be able to **DESCRIBE** the basic characteristics of cast iron, vitrified clay pipe, plastic pipe, concrete drain pipe, bituminous fiber pipe and copper pipe.

PlumbingTechnology1200 - Installation of Common WW Systems

Standard Time to Complete: 40 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. In reference to Underground and Aboveground Vents within a building you will be able to **DESCRIBE** the key requirements that govern piping for the following systems: Chemical Waste and Acid Systems, Indirect Waste Piping, and Storm Drainage Systems.
2. In reference to Underground and Aboveground Vents Within a Building, you will be able to **DESCRIBE** the fundamental nature of and key work practices relating to the following types of joints: Cast Iron Caulked Joints, Cast Iron Compression Joints, Cast Iron Hubless Joints, Asbestos-Cement Sewer Pipe Joints, Plastic Pipe Joints, Bituminous Fiber Pipe Joints, Vitrified Clay Sewer Pipe Joints, Concrete Sewer Pipe Joints, Threaded Joints and Copper Soldered Joints.
3. In reference to Installation Methods (Building Sewers), you will be able to **DESCRIBE** the key considerations for cast iron pipe and fittings.
4. In reference to Installation Methods (Building Sewers), you will be able to **DESCRIBE** the key considerations for sewer installation.
5. In reference to Drainage, Waste and Piping Within a Building. You will be able to **DESCRIBE** the key restrictions – things a plumber is not allowed to do. You will also be able to **DESCRIBE** how various types of pipe (for horizontal runs) should be supported. You will also be able to **DESCRIBE** how various types of pipe (for vertical runs) should be supported.
6. You will be able to **DESCRIBE** fundamentals of common methods used to handle Indirect Waste Piping and Special Wastes.



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PlumbingTechnology1300 - Fundamentals of Domestic Water Systems

Standard Time to Complete: 40 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE** the main components of a Domestic Water Supply System.
2. **DESCRIBE** key components of a basic fuel-burning water heating system. You will be also able to **DESCRIBE** the following safety devices: Pressure Relief Valve, Temperature Relief Valve and Relief Valve drip lines and Water Heater drain pans. You will also be able to **DESCRIBE** the principles of the inverted upfeed system, hot water looped system and the downfeed system.
3. In reference to Materials for Water Systems, you will be able to **DESCRIBE** at least four types of piping material that can be used, and the two types of pipe that cannot be used for a potable water system.
4. In reference to Installing Water Distribution Piping, you will be able to **DESCRIBE** what is generally allowed and what are common restrictions. You will also be able to **DESCRIBE** fundamentals of support for such systems.
5. In reference to Threaded Pipe, Fittings and Valves, you will be able to **DESCRIBE** fundamentals of: Cutting, Reaming and Threading Pipe, Cutting Reaming and Joining Copper Tubing, and Cutting, Reaming and Joining Plastic Pipe.
6. You will be able to **DESCRIBE** the fundamentals of installation of the following fixtures: Water closets, Urinals, Bathtubs and Showers, Sinks and Laundry Tubs and Dishwashers. You will also be able to **DESCRIBE** the requirements of fixture clearances for the following: Water Closets, Urinals, Lavatories, and Showers.



PlumbingTechnology1400 – Gas System - Plumbing Systems

Standard Time to Complete: 40 hours

Learning Outcomes

On successful completion of this learning module, you will be able to:

1. **DESCRIBE**, in a fundamental sense, the suitability of following the materials for gas systems: Steel and Wrought Iron Pipe, Brass and Copper Pipe, and Plastic Pipe.
2. **DESCRIBE**, in a general sense, the requirements for installation of gas piping for interior installations.
3. **DESCRIBE**, in a general sense, the requirements for installation of gas piping for exterior installations.
4. **DESCRIBE** the fundamental requirements for installation of gas piping in Concrete or Masonry
5. **DESCRIBE** fundamental aspects of the following: Installing Drip Pipe and Shutoff Valves
6. **DESCRIBE** fundamental aspects of the following: Installing and Venting Gas Appliances



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Course Accreditation



Houston Industrial Training Institute has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102. In obtaining this approval, HITI has demonstrated that it complies with the ANSI/IACET 1-2007 Standard which is widely recognized as the Standard of good practice internationally. As a result of their Authorized Provider membership status, HITI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET 1-2007 Standard."

Information: Registrar@HoustonIndustrialTraining.com. Please use the **Contact Us** button located on our Home Page.



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