

2017 Plumbing Training Requirements in the United States

Introduction

In the United States registered apprenticeship programs meet the skilled workforce needs of the American industry by training millions of qualified individuals for lifelong careers since 1937. The United Association a standalone union organization of over 370,000 plumbers has been doing this internally since 1889. Registered apprenticeships help mobilize America's workforce with structured, on-the-job learning in the construction building trades. They connect job seekers looking to learn new skills with employers looking for qualified workers, resulting in a workforce with industry-driven training, and employers with a competitive edge.

Registered apprenticeship programs are administrated jointly by employers, employer associations, and labor unions to provide a comprehensive approach to plumbing training. In this study, we will review the training requirements that are most prominent throughout the United States in relation to the best practice. This case study will review apprenticeship curriculum, licensing and enforcement, continuing education credits (CEC), and the cost associated with the training.

Training

In the United States, there are many different institutions that offer opportunities for plumbing training. Some students can begin their training in high school, learning basic skills to prepare them for formal training after they graduate. The minimum age to work in the field is 16 years-old. Most apprenticeships require a high school diploma, or equivalent, and start at a minimum age of 18. Apprenticeships are normally 4 years of classroom and on-the-job training under the supervision of a journeyman or master plumber.

The United Association (UA), an organization of union plumbers and pipefitters throughout the United States and Canada, require a 5-year apprenticeship. They go above and beyond the federal requirements because they specialize in medical gas, backflow prevention, and welding certifications.

United Association Classroom Curriculum

The basic guidelines that a typical UA training school would implement for plumbing training are:

1st Year:

Basic Electricity - 36 hours, Blueprint Print Reading - 60 hours, Job Safety and Health - 30 hours, Piping Installation - 45 hours, Applied Math - 21 hours, Soldering and Brazing - 15 hours, Use and Care of Tools – 24 hours, UA Standards of Excellence (UA history) - 45 hours, and OSHA 10 Certification - 10 hours. **292 Total Hours**

2nd Year:

Drainage - 66 hours, Gas Installation - 30 hours, Plumbing Fixtures and Appliances - 36 hours, Applied Math - 21 hours, Applied Science - 12 hours, Plumbing Service Work - 15 hours, and Water Supply - 36 hours. **276 Total Hours**

3rd Year:

Code Interpretation - 60 hours, Job Safety and Health - 15 hours, Piping Installation - 30 hours, Service Work - 36 hours, Water Supply - 36 hours, Welding - 90 hours, and Green Technology - 18 hours. **285 Total Hours**

4th Year:

Advanced Plan Reading - 60 hours, Gas Installation - 15 hours, Plumbing Fixtures and Appliances - 9 hours, Pumps - 30 hours, Applied Math - 66 hours, Applied Science - 42 hours, Rigging - 15 hours, Service Work - 30 hours, Soldering and Brazing - 15 hours, and Green technology - 6 hours. **288 Total Hours**

5th Year

Backflow Certification - 57 hours, Code Interpretation - 30 hours, Foreman Training - 54 hours, Hydronic Heating and Cooling - 30 hours, Medical Gas Systems - 60 hours, Rigging - 30 hours, and Service Work - 24 hours. **285 Total Hours**

A 5-Year Apprenticeship requires minimum of 1400 total hours in the classroom (actual average hours exceeds 1600).

Each school would use this format as a guideline and would tailor it to their own jurisdiction. Example: Some areas might have more residential work than commercial work and that would dictate what is in their curriculum. Also, there would be a minimum of 8000 hours of on-the-job training per year. They are assigned to work for a plumbing contractor under the supervision of a journeyman or master plumber for 5 years. They are compensated for their work based on their apprentice year (Attachment A). Apprentices typically earn a specific percentage of the journeyman scale. For example, a 1st year apprentice would make 40 %, a 2nd year would make 50%, a 3rd year would make 60%, a 4th year would make 70%, and a 5th year would make 80%. After successfully graduating from the program, the apprentice would receive the full journeyman scale.

Testing Requirements

Testing requirements vary from state to state. Example: Pittsburgh, PA - A plumbing licensing test for a journeyman requires the applicant be a registered apprentice for 4 years with the State of PA and the City of Pittsburgh at a cost of \$20.00 per year. In addition, they must have 576 classroom hours at an accredited training center, and 8,000 working hours during the 4 years.

After the 4th year of apprenticeship, they can take their licensing test at a cost of \$125.00. The test consists of 100 multiple choice questions, 25 violation questions on drawings, and time allowance of approximately 4 hours to complete. Applicants must score 70% for a passing grade.

Applicants for a master plumbing license must have been a practicing journeyman for two years. The test costs \$250.00 and applicants must earn a 70% or better, and consists of 100 questions; 50 code questions and 50 questions on drawings.

Licensing fees for a journeyman are \$100.00 per year. The fee for a master plumber is \$200.00 per year.

Continuing Educational Credits (CEC)

Many state licensing programs require that plumbers obtain 4 hours of continuing education every year to keep their plumbing license current. Course topics must be on the state- approved list (Attachment B). Classes can be approved for 2 hours, 4 hours, and sometimes 6 hours. When a sponsor gets a course outline from a manufacturer or other source, they must submit the course outline, and the instructor's name and their bio to the state licensing department for approval. Once the submittal is approved, the course is assigned a number and the class is offered to all plumbers from the state's website. If you don't get your continuing education credits, your license will be revoked.

Training Facilities

There are training facilities in most major metropolitan areas. They range from vocational schools, community colleges, trade associations, and contractor groups. Most training centers charge a fee for training to cover the cost of the program.

The United Association (UA) along with the Mechanical Contractors Association of America (MCAA) fund their training programs thru a jointly-managed training trust fund that is funded by hourly contributions from the reported man-hours. Each signatory contractor reports hours worked to the trust fund every month on a transmittal sheet (Attachment C).

The training committee is made up of contractors and union representatives who manage the assets. They develop the curriculum, maintain the buildings, supervise the training staff, administrate the office staff, discipline the apprentices, and pick who is eligible to be accepted into the program.

The UA has 300 training centers across the country and spend over \$250 million dollars on training every year. We have 52 mobile tractor trailers that can be shared throughout the United States and Canada. The UA's Instructor Training Program is held every year for over 2,000 instructors who are educated on how to teach the curriculum to their students and are informed on the latest technology and tools. Altogether, there are over 40,000 apprentices who attend the UA apprenticeship every year.

Enforcement

Most governments have plumbing inspectors who work for the building standards or health departments. These inspectors perform jobsite visits to ensure that the plumbing is installed properly by licensed apprentices and journeyman, and that all necessary permits and documents are filed by the registered master plumber.

Before any plumbing work begins, the plumber must file a plan to be approved by the plumbing review board and pay a fixture fee (Attachment D). Once the plan is approved, the jobsite will be issued a work permit that must be posted in a visible and public area. All work must be inspected by a plumbing inspector before any underground piping is backfilled or any piping in the walls is covered. After the job is roughed in and fixtures set, the building must get a final inspection for occupancy. All journeyman and apprentices must carry their license on them for review during all inspections.

Any infractions or violations will be assessed by the government that has jurisdiction where the project is being built. Fines and licensing suspensions are issued by the governing boards.

Job Specific Training

Apprentices are only trained in the specific trade that they declare. A plumber gets trained in plumbing. An HVAC service technician gets trained in heating, cooling and refrigeration only. All the trades require job-specific trainings. If you want a license in more than one trade you would have to meet the criteria of each different trade to qualify. Many plumbers have two licenses, an HVAC license for installing heating, cooling and refrigeration, and one for plumbing. All the building trades in the United States have similar training for each individual trade and have some type of license or certification after their apprenticeship.