

**Sophomore Year, Introduction to Plumbing, Pipefitting, and Welding (one hour block)** - Students are introduced to materials, codes, and Texas state laws and rules. Safety with respect to the trade is also covered. Basic assemblies are taught with PVC along with solvents, cements, and cleaners for use in DWV (drain, waste, vent) systems. Basic copper assemblies and sweating copper is introduced for use in water supply lines. Other materials for water supply such as PEX are also covered.

**Junior Year, Plumbing, Pipefitting, and Welding (two hour block)** - Students increase their knowledge and skills in tool usage, safety, pipefitting, drainage, building codes, water supply, and welding. Added emphasis is given to hands on instruction and lab experience.

**Senior Year, Advanced Plumbing, Pipefitting, and Welding (two hour block)** - Students acquire knowledge and skills in industrial pipe fitting, motorized equipment, oxy-fuel cutting, pipe systems (including water, chemical, steam, compressed air, oil), and advanced welding. Students gain advanced knowledge and skills needed to enter the industry as an apprentice plumber, pipe fitter, and/or welder or prepare for a post-secondary degree.

#### **ENRICHMENT OPPORTUNITIES**

The Academy wants students to see and experience the world of construction. Field trip opportunities are abundant and appropriate to the chosen strand. In addition to job site visits, students also have the opportunity to go on college visits with peers in other strands.

Construction Careers Academy has a very active business partnership base. Job shadowing is arranged where students can visit a company and shadow a professional in their strand. The Academy has successfully placed students in paid internships over the summer and during the school year. Job assistance is also available to CCA alumni.

(Source: BLS Plumbing, Pipefitting and Welding)



The mission of CCA is to provide an advanced and rigorous curriculum with a focus on construction technology, construction management, architectural design, applied engineering and real-world experience that will prepare students for studies in higher education and/or a career in a construction-related industry.



CONSTRUCTION CAREERS  
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**Building Construction  
Leaders For the Future**



**PLUMBING, PIPEFITTING, AND WELDING  
PROGRAM**

# PLUMBING, PIPEFITTING, AND WELDING

## **IS THE PLUMBING, PIPEFITTING, AND WELDING PROGRAM THE RIGHT FIT?**

Students interested in the Plumbing, Pipefitting, and Welding (PPW) program have a strong desire to work with their hands. The program is unique in that the curriculum is highly vested in project based learning. Students will have the opportunity to engage in real-world applications, collaborate with some of the industry's top rated business professionals, and work with plumbing and welding companies. Upon completion of the PPW program, students will be prepared to enter the work force post high school, attend a two-year college, earn an Associate's Degree and/or a certification in a field of their choice. Since CCA is an approved Department of Labor Full Student-to-Apprenticeship Program, there is an additional option to continue an apprenticeship with a qualifying company.

## **APPRENTICESHIP PROGRAM**

CCA is a registered Department of Labor Student-to-Apprenticeship program. Most plumbers learn their trade in a 4- or 5-year apprenticeship program. For each year of the program, apprentices typically receive 2,000 hours of paid on-the-job training as well as some classroom instruction. While at CCA, students will receive apprenticeship hours. In the classroom, apprentices learn plumbing theory, blueprint reading, mathematics, plumbing code requirements, Texas state laws and rules, and safety practices.

Students in an apprenticeship program are eligible to work for most companies at the age of 16. After completing an apprenticeship program upon graduation, plumbers are considered to be journey workers and may perform duties on their own, subject to any local or state licensing requirements.

## **EMPLOYMENT FORECAST FOR PLUMBING, PIPEFITTING, AND WELDING**

According to the Bureau of Labor Statistics (BLS), plumbers & pipefitters can anticipate, on average, a larger than average growth rate of 16 percent between 2016 and 2026. Annually, these workers average 480,600 jobs.

Welders can anticipate, on average, a 5 percent job growth rate between 2016 and 2026. Annually, welders average 404,800 jobs.

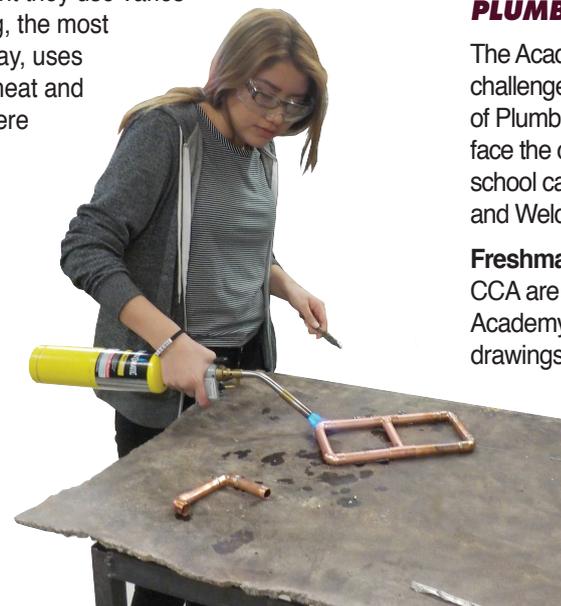
**Salary Range:** On average a person in the plumbing and pipefitting industry earns between \$30,400 and \$90,500 annually with the average wage of \$51,450.

On average a person in the welding industry earns between \$26,800 and \$62,100 annually with the average wage of \$39,390.

**Plumbing Jobs:** Plumbers install and repair water, drainage, gas, and other piping systems in homes, businesses, and factories. Plumbers install plumbing fixtures such as bathtubs and toilets, and appliances, such as dishwashers and water heaters. Plumbers also maintain septic systems—the large, underground holding tanks that collect waste from houses that are not connected to a sewer system.

**Pipefitting Jobs:** Pipefitters, sometimes simply called fitters, install and maintain pipes that carry chemicals, acids, and gases. These pipes are used mostly in manufacturing, commercial, and industrial settings. Fitters install and repair pipe systems in power plants, as well as heating and cooling systems in large office buildings. Some pipefitters specialize as gasfitters, sprinkler fitters, or steamfitters.

**Welding Jobs:** Welders work in a wide variety of industries, from car racing to manufacturing. The work that welders do and the equipment they use varies with the industry. Arc welding, the most common type of welding today, uses electrical currents to create heat and bond metals together, but there are more than 100 different processes that a welder can use. The type of weld is usually determined by the types of metals being joined and the conditions under which the welding is to take place.



## **RELATED OCCUPATIONS**

**Construction and building inspectors** ensure that construction meets local and national building codes and ordinances, zoning regulations, and contract specifications. The average annual salary is \$58,480.

**Construction managers** plan, coordinate, budget, and supervise construction projects from start to finish. The average annual salary is \$89,300.

**Sheet metal workers** fabricate or install products that are made from thin metal sheets, such as ducts used in heating and air conditioning systems. The average annual salary is \$46,940.

## **TIPS FOR SUCCESS IN THE PLUMBING, PIPEFITTING, AND WELDING PROGRAM**

Students who enter the Academy's PPW program should begin preparing for the rigor of the program. Here are some tips that will help:

- 1) Develop good study habits.
- 2) Develop a system of organization. Practice good time management.
- 3) Start building a portfolio.
- 4) Invest time in networking with individuals in the field.

## **COURSE SEQUENCE & DESCRIPTION FOR PLUMBING, PIPEFITTING, AND WELDING STRAND**

The Academy's advanced and rigorous curriculum is guaranteed to challenge and prepare students for a successful career in the fields of Plumbing, Pipefitting and Welding. Students will be prepared to face the challenges of a certification program and/or a post high school career of their choice. Students in the Plumbing, Pipefitting and Welding strand will adhere to the following **Course Sequence:**

**Freshman Year, Principles of Construction** – All freshmen at CCA are required to take this course their first year in the Academy. Safety, hand tools, power tools, and reading technical drawings are introduced. Students will begin to develop an understanding of the educational requirements and career opportunities in their cluster. Students will leave this course prepared for their strand choice with a certification in the 10 Hour OSHA Construction and in NCCER Core.