



# HVAC Training Program

## Residential Maintenance & Service

# Program Begins October 7th!



**7 Month**  
Certificate  
Program

Potential  
Starting Salary  
\$20/Hr.  
Career Average  
\$55,290/Yr. \*

Curriculum  
Recognized by  
U.S. Dept. of  
Labor, Office of  
Apprenticeship

## Program Description

- ◆ Entry-level certification for residential and/or light commercial heating and air-conditioning industry.
- ◆ Experienced, field-trained instructors lead students through essentials of HVAC maintenance, repair and basic troubleshooting.
- ◆ In-depth, hands-on training with a variety of equipment.

## Potential Career Paths

- ◆ HVACR Service Technician
- ◆ Maintenance Technician
- ◆ Install Technician
- ◆ Service Management
- ◆ Field Supervisor
- ◆ Sales and Marketing
- ◆ Facilities Management



**Located in Mira Mesa, CA**  
**Enroll Today! [www.phccsd.org](http://www.phccsd.org)**  
**858.693.3855 | [training@phccsd.org](mailto:training@phccsd.org)**

\*Based on O\*NET Online Occupational Database  
and Career One Stop for San Diego County.  
Salary not guaranteed. Use as a guideline only.

# PHCC Academy of San Diego – HVAC Training Program

## Residential Maintenance Service Tech Certificate

9920 Scripps Lake Dr #102, San Diego, CA | (858) 693.3855 | [www.phccsd.org](http://www.phccsd.org)



### OBJECTIVES

- Be proficient and confident to perform residential and light commercial maintenances and basic troubleshooting.
- Identify components and sequence of operation in various systems.
- Identify industry tools and safely and confidently demonstrate proper use and form for each.

### COURSE OUTLINE

#### Module 1 – What is HVAC?

- Types of systems and their purpose
- Air delivery – the “V” in HVAC
- To bring comfort to conditioned spaces

#### Module 2 – HVAC Safety

- Personal protection – gloves, eye protection, ladder safety, jewelry, proper clothing, extreme heat environments, safe electrical practices, lock out tag out, fire safety
- Materials and chemicals that you can encounter; MSDS
- Phosgene is your enemy

#### Module 3 – System Controls

- Thermostats
- Power supplies; different voltages
- Control voltage vs. live voltage; load voltages
- Circuit/control boards
- Transformers

#### Module 4 – HVAC Tools of the Trade

- Basic tools needed
- Why these tools are needed
- How to use them correctly

#### Module 5 – Gas Furnaces/Air Handlers

- Types of furnaces
- Single stage; Two-stage

- Motors – V-speed vs. PSC
- Electric heat
- Air handlers
- Component identification
- Sequence of Operation
- Condensate for condensing furnaces
- Make/Model/Serial – What are you looking at?
- Proper gas pressures – 90%, 80%, 70%
- Propane natural gas

### Module 6 – Air Conditioning

- System components
- Compressor, evaporator coil, condenser coil, metering device
- Refrigerant cycle; Removing heat/humidity from a conditioned space
- Condensate, condensate, condensate, termination and proper installation
- Subcool vs. superheat calculation
- Proper pressure; PT charts
- Proper voltages
- Proper airflow
- Make/Model/Serial – What are you looking at?

### Module 7 – Heat Pumps

- System components
- What does the heat pump do?
- Refrigerant cycle and charging; Understanding pressures
- Defrost cycle
- Air flow
- Heat transfer
- Ducting and airflow / Ductulator
- Duct sizing and CFM and velocity
- What is the return and supply?
- Static pressures; their importance; design pressures
- Proper temp splits and temp rises

### Midterm Review / Overview

- What we have learned so far
- Midterm Exam
- Is there anything you would like to go more in depth about?
- Lab test

### Module 8 – Low Voltage

- What is it for? What does it control?

- Where does it go?
- What is neutral? What is common?
- Low voltage components
- Wiring diagrams and component identification
- Ladder diagrams
- Measuring low voltage valves – min., max.
- Millivolts
- Low voltage protection
- Transformers

### Module 9 – High Voltage

- Safety practices – lock out tag out, Is power on or off?
- How to confirm power is off
- Discharging capacitors / measuring caps
- Component identification
- Make/Model/Serial – Data plate understanding
- Amp draws
- Single -phase / 3-phase
- 208/230; 460 volts; 120
- Transformers
- Fuses

### Module 10 – Troubleshooting Scenarios

- Ask customer questions – What is it doing? What is it not doing?
- Do I have power?
- Where did my sequence of operation stop?
- Is my airflow correct? Is my filter clean?
- Common failures
- Caps
- Charging
- Filters
- Flame sensor
- Fuses/breaker

### Module 11 – Brazing

- Good fit and proper clearance
- Cleaning the metals
- Fluxing the parts
- Assemble for brazing
- Cleaning the brazed joint

### Module 12 – Customer Service

# PHCC Academy of San Diego

## 2019-2020 Fee Schedule



## HVAC Training Program Residential Maintenance & Service

All Academy Administrative Fees Are Included in Yearly Tuition Rate

Tuition and Fees per Student	Fx	PHCC Member	Student Rate	Open Rate (Non-Member)
FULL YEAR TUITION		\$1,795.00	\$2,195.00	\$2,495.00
<i>Tuition – One-Time Payment – 10% off Billed Oct, due on the 1<sup>st</sup></i>	1	\$1,615.50	\$1,975.50	\$2,245.50
<i>Tuition—Semester Payments – 5% off Billed Oct &amp; Jan, due on the 1<sup>st</sup></i>	2	\$852.50	\$1,042.50	\$1,185.00
<i>Tuition— Monthly Payments First 2 months due by 1<sup>st</sup> night of school Billed monthly (Dec-Apr), due on the 1<sup>st</sup></i>	7	\$213.57	\$270.71 <i>Restrictions apply</i>	N/A
<b>Entrance Exam Fee</b> <i>New Students – Non-refundable</i>	1	Waived	\$50.00	\$50.00

*\*Initial tuition payment and entrance exam fee are due no later than first night of class.*

**Required books must be obtained and brought to every class. PHCC Rates are below.  
May be purchased through any source; match title and edition.**

Book Description	Edition	Academy Rate
PHCC Ed. Foundation, HVACR 101	1 <sup>st</sup> Edition	\$130.00

# PHCC Academy of San Diego

## 2019-2020 Training Program Registration Form



<b>PLEASE PRINT CLEARLY. Must be 18 years of age to apply. High School Diploma or Equivalent Recommended.</b>					
Last Name:		First Name:		Student Status: <input type="radio"/> FIRST TIME <input type="radio"/> RETURNING	
Address:			City:	State:	Zip Code:
Phone:	Accept Text Msg? <input type="radio"/> Yes <input type="radio"/> No		Email:		
Date of Birth:	Last 4 of SSN:		Gender: <input type="radio"/> Male <input type="radio"/> Female		<input type="radio"/> Veteran <input type="radio"/> Non-Veteran
Race (Optional): <input type="checkbox"/> American Indian <input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> Black/Non-Hispanic <input type="checkbox"/> Hispanic <input type="checkbox"/> White/Non-Hispanic <input type="checkbox"/> Other					
Highest Level of Education: <input type="radio"/> High School Diploma <input type="radio"/> GED <input type="radio"/> Trade School <input type="radio"/> Some College <input type="radio"/> College Graduate <input type="radio"/> Other					
I wish to enroll in: <input type="radio"/> HVAC Certificate Program or <input type="radio"/> Journeyman Plumbing Apprenticeship >> <input type="radio"/> Year 1 <input type="radio"/> Year 2 <input type="radio"/> Year 3 <input type="radio"/> Year 4					
Sponsoring Company:			Company License Number:		
Address:			City:	State:	Zip Code:
Contact Person:		Phone:		Email:	
<input type="radio"/> Current PHCC Member		<input type="radio"/> Currently Not a Member		Tuition to be billed to: <input type="radio"/> Sponsoring Company <input type="radio"/> Student	
Tuition Payment Terms: <input type="radio"/> Payment in Full <input type="radio"/> Semester Payments <input type="radio"/> Monthly Payments					
<p><b>Please read carefully and sign below. This establishes your financial responsibility.</b></p> <ol style="list-style-type: none"> <li>1) Financially Responsible Party is responsible for full payment of tuition and fees associated with the Training Program, regardless of student attendance throughout the Academic school year.</li> <li>2) Initial tuition payment is due no later than the first night of class via cash, check or credit card: <ul style="list-style-type: none"> <li>▪ Payment in Full: Full tuition payment + Entrance Exam Fees</li> <li>▪ Semester payments: One semester payment + Entrance Exam Fees</li> <li>▪ Monthly payments: Two months of tuition payments + Entrance Exam Fees</li> </ul> </li> <li>3) Book fees are billed separately upon order. Books can be purchased through the Academy, online retailers or other sources, if the book title and edition match identically to the course curriculum.</li> <li>4) Tuition payment invoices are sent via email 15 days prior to due date. We provide a 10-day grace period for all billed tuition payments. A late fee of \$35 is automatically assessed on the 11th of every month that tuition remains unpaid.</li> <li>5) In the event a student drops from the program, regardless of reason, a <u>written notice</u> must be received by the financially responsible party, at which time the current month the student drops will still be charged. No refunds are given after the first of the month, regardless of the date the student leaves the program, and no refunds are given for any prepaid tuition.</li> <li>6) For accounts 30 days past due, student will be suspended and an official letter will be issued to Financially Responsible Party as formal notification. Student <u>WILL NOT</u> be permitted to attend class until balance is received and a valid credit card placed on file for payments thereafter. Continuous non-payment of tuition will result in cancellation of student enrollment and withholding of services, certifications and grades until financial liabilities are resolved. Outstanding debt is reported to credit bureaus &amp; collection costs, including attorney fees, may be incurred.</li> </ol>					
<b>Signature of Financially Responsible Party</b>			<b>Printed Name</b>		<b>Date</b>
<p><b>Registering Student – Please read carefully and sign.</b></p> <p>As a Student in the PHCC Academy of San Diego Training Program, I certify that:</p> <ol style="list-style-type: none"> <li>1. All classroom hours are required. I will attend and report to all classes on time and remain for the duration of class.</li> <li>2. I will make up all absences within 60 days of a missed class.</li> <li>3. I will adhere to all rules and regulations of the training program.</li> <li>4. I will accurately complete my on-the-job (OJT) forms every day, based on the work performed that day. I will have my supervisor review and sign my OJT forms at the end of each month. I will submit my completed and signed OJT forms to the Academy by the 15<sup>th</sup> of each month.</li> <li>5. Should I leave my sponsoring company during the current school year, I will immediately inform Academy staff. I understand that if I leave my employ, I may be responsible for the balance due for the school year.</li> </ol>			<p><b>Sponsoring Company – Please read carefully and sign.</b></p> <p>As the Sponsoring Company and/or Supervisor of a Student in the PHCC Academy of San Diego Training Program, I certify that:</p> <ol style="list-style-type: none"> <li>1. My company holds a valid California Plumbing (C-36) and/or HVAC (C-20) License, respective to the enrolled program.</li> <li>2. I currently employ the enrolling student.</li> <li>3. All classroom hours are required. I will arrange the student's work schedule to permit regular on-time attendance of classes.</li> <li>4. I will abide by and enforce all rules and regulations of the training program.</li> <li>5. I will notify the Academy in writing when a student ceases to be employed or is otherwise ineligible for continued company sponsorship. I understand that tuition for each month is due regardless of the day the student leaves the program, unless you notify us on any day prior to the billing month.</li> </ol>		
<b>Student Signature</b>			<b>Signature of Sponsor</b>		<b>Date</b>
<p><i>The Plumbing-Heating-Cooling Contractors Academy of San Diego admits students of any race, color, national and ethnic origin to all the rights, privileges, programs, and activities generally accorded or made available to students at the school. It does not discriminate on the basis of race, color, national and ethnic origin in administration of its educational policies, admissions policies, scholarship and loan programs, and other school-administered programs.</i></p>					
<b>For Academy Use Only</b>					
Amount Paid: _____		Date Paid: _____		Paid By: <input type="checkbox"/> Cash <input type="checkbox"/> Check # _____ <input type="checkbox"/> Credit Card <input type="checkbox"/> Member Invoice # _____	