

# APPRENTICESHIP - AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

## Program Description

The Air Conditioning & Refrigeration Technology program is offered in partnership with the Pipe Trades Training Center and the UA Local 467. It is a 5-year registered apprenticeship program. The program provides students with a combination of paid on-the-job training and in-class instruction. It prepares students with the relevant skills they need to service, analyze, maintain, and repair complex HVAC equipment used in hospitals, skyscrapers, manufacturing facilities, and research development laboratories. Furthermore, the students are trained to service and repair all types of refrigeration equipment in all sizes of buildings. Lastly, as the California Energy Commission and Public Utilities Commission focus on energy conservation, there will be more demands for certified LEED professionals, TAB certified technicians and supervisors, residential and commercial compliance testing professionals. The Associate in Science degree supports the pipeline of workers needed for these forecasted changes in the industry. Enrollment in apprenticeship courses is limited to apprentices registered with the California Division of Apprenticeships Standards, according to the California Labor Code, Section 3074.3.

Learn more about the program on the [Apprenticeship website](#).

## Program Learning Outcomes

- In compliance with applicable standards and codes, students will demonstrate ability to install and remove refrigeration, heating, air conditioning, and ventilation systems, including the appropriate electrical/electronic control systems.
- In compliance with applicable standards and codes, students will demonstrate ability to maintain, repair, extend, and/or alter refrigeration, heating, air conditioning, and ventilation systems, including electronic control systems.

## Career Opportunities

Graduates will be employable as: Service Manager, Facilities Manager, Project Manager, Estimator, HVACR Instructor, HVACR Sustainable Technologies Technician, and/or a Union Business Agent/Business Manager in almost any industry.

## Award Type(s)

- AS = Associate in Science Degree
- CA = Certificate of Achievement

## Units Required

- Major: 45-70
- Certificate(s): 45-70

## Associate Degree Requirements

Code	Title	Units
<b>English Proficiency</b>		
Select one of the following:		
ENGL 1A	COMPOSITION & READING	5
ENGL 1AH	HONORS COMPOSITION & READING	5
ESLL 26	ADVANCED COMPOSITION & READING	5
or equivalent		
<b>Mathematics Proficiency</b>		
College-level math course at or above the level of Intermediate Algebra		

A minimum of 90 units is required<sup>1</sup> to include:

- Completion of one of the following general education patterns: Foothill General Education, CSU General Education Breadth Requirements or the Intersegmental General Education Transfer Curriculum (IGETC)
- Core courses (45-70 units)

<sup>1</sup> Additional elective course work may be necessary to meet the 90-unit minimum requirement for the associate degree.

**Note:** All courses pertaining to the major must be taken for a letter grade. In addition, a grade of "C" or better is required for all core courses used for the degree or certificate.

## Core and Support Courses

Code	Title	Units
<b>Core Courses</b>		
<i>Pathway #1 - Pipe Trades Training Center students:</i>		<i>70</i>
APPT 129	SPECIAL TOPICS	
APPT 130	REVIEW & TURNOUT	
APPT 151	RF 101 BASIC REFRIGERATION SERVICE SKILLS	
APPT 152	RF 102 BASIC ELECTRICITY & REFRIGERATION	
APPT 153	RF 201 MECHANICAL SYSTEM FUNDAMENTALS	
APPT 154	RF 202 ELECTRIC SYSTEM FUNDAMENTALS	
APPT 155	RF 301 ADVANCED ELECTRIC SYSTEMS	
APPT 156	RF 302 HVACR CONTROL SYSTEMS	
APPT 157	RF 401 ADVANCED MECHANICAL SYSTEMS	
APPT 158	RF 402 ADVANCED REFRIGERATION & CHILLERS	
APPT 159	RF 501 START, TEST & BALANCE; HVAC SYSTEMS	
<i>Pathway #2 - UA Local 467 students:</i>		<i>45</i>
APPT 171	BASIC REFRIGERATION/HERITAGE/CFC/OSHA 10	
APPT 172	REFRIGERATION SCIENCE	
APPT 173	BASIC ELECTRICITY FOR THE HVAC SERVICE TRADE	
APPT 174	ADVANCED ELECTRICITY/PNEUMATIC DDC INTRODUCTION	
APPT 175	CONTROLS I/ELECTRO PNEUMATICS	
APPT 176	CONTROLS II/ADVANCED PNEUMATICS CALIBRATION/HYDRONICS	
APPT 177	START, TEST & BALANCE I	

APPT 178	START, TEST & BALANCE II/ENERGY AUDITING PRACTICES
APPT 179	CHILLERS/SPECIAL SYSTEMS/HVACR STAR REVIEW
APPT 180	HVACR STAR REVIEW & EXIT EXAM
<b>Total Units</b>	<b>45-70</b>

## Certificate Requirements

### Certificate of Achievement in Air Conditioning and Refrigeration Technology

- Units: 45-70

The certificate of achievement is awarded upon completion of the core courses. General education courses are not required.

Currently offered at: San Mateo and San Jose.