

Heating, Ventilation, Air-Conditioning and Refrigeration Certificate of Accomplishment - Active

Department: Engineering & Technology

Approval: February 2016

Effective Semester: Fall 2016

The Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) program at City College of San Francisco offers instruction, theory, and training in design and repair of HVACR equipment. The program combines theory with practical hands-on training designed to simulate the work environment and skills needed to excel in this challenging field. The program prepares students for employment in the field and provides an opportunity for currently employed personnel to achieve a level of HVACR certification.

Students completing the program will be qualified for employment as HVACR installers, mechanics and technicians.

Learning Outcomes

Upon completion of this program, students will be able to:

- Demonstrate a strong understanding about thermodynamic properties of the steam tables; dry air and psychrometric processes involved in air-conditioning cooling and heating systems.
- Calculate air-conditioning cooling and heating load calculations.
- Estimate fan horsepower from airflow quality and pressure drop for ductwork systems and water horsepower from water from through pipes.
- Demonstrate the skills of selecting proper air conditioning units, refrigeration components, equipment and pipe sizes for fluid systems in buildings.
- Verify safety devices, record data in logs, and identify any potential problems.

Students may obtain the Certificate of Accomplishment in Heating, Ventilation, Air-Conditioning & Refrigeration by completing the following courses with a grade of "C" or higher. At the start, ET130 should be taken, followed by or concurrent with ET136A, ET136B, and CAD187. Students who have completed ET 135A, B, or C under the previous program will have their coursework honored and should speak to the instructor or department chair to determine the best course of academic study.

The minimum time for completion of this certificate is 2 semesters. Completion time will vary based on student preparation and number of units completed per semester.

Courses Required for the Certificate of Accomplishment in Heating, Ventilation, Air-Conditioning and Refrigeration

Course	Units
Required courses:	
ET 130 - Applied Fluid Mechanics for Mechanical Engineering Technology	3.00
ET 136A - HVAC System Fundamentals	2.00
ET 136B - Fundamentals of Air Conditioning and Refrigeration	2.00
CAD 187 - Mechanical, Electrical, and Plumbing (MEP) Building Information Modeling (BIM) in Revit	2.50
Total:	9.50
Total:	9.50

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