

# APRT 141A: COMPONENTS OF RESIDENTIAL HVAC SERVICE

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	2.5
<b>Hours:</b>	24 lecture, 30 laboratory per quarter (54 total per quarter)
<b>Prerequisite:</b>	Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Residential Service Apprenticeship Program.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	None
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- A student will be able to describe Chimney and flue operations under typical conditions.
- A student will be able to identify basic electrical symbols and diagrams.

## Description

Identifying components and evaluating their status in servicing heating and air conditioning equipment. Discussion of the service technician's approach to field problems.

## Course Objectives

The student will be able to:

- Describe residential furnace system, chimney and flue operation under typical conditions.
- Demonstrate refrigeration leak detection and repair.
- Read basic electrical symbols and schematic diagrams.

## Course Content

- Describe residential furnace system, chimney and flue operation under typical conditions
  - Service Technician's approach to field problems
  - Chimneys, vents and flues; typical residential operation, health and safety, PVC, types of drafts
- Demonstrate refrigeration leak detection and repair
  - Refrigeration components review
  - Refrigeration leak detection, brazing and charging
- Read basic electrical symbols and schematic diagrams
  - Symbols and drawing conventions
  - Overview of controls

## Lab Content

- Work with residential furnaces and air conditioners
- Identify system component

- Verify system component functions

## Special Facilities and/or Equipment

Laboratory equipped with air conditioning equipment.

## Method(s) of Evaluation

- Results of written quizzes and tests
- Satisfactory completion of shop projects
- Comprehensive written final examination
- Maintenance of a workbook of student's daily work activities

## Method(s) of Instruction

- Lecture
- Discussion
- Laboratory
- Demonstration

## Representative Text(s) and Other Materials

Meyer, Leo A. & Associates, Inc. [Servicing Environmental Systems, Workbook 1](#). Current edition. Alexandria, VA: National Training Fund, Alexandria, VA.

Meyer, Leo A. & Associates, Inc. [Servicing Environmental Systems, Workbook 2](#). Current edition. Alexandria, VA: National Training Fund.

Althouse, Andrew D., C. H. Turr, and Alfred F. Bracciano. [Modern Refrigeration and Air Conditioning](#). Current edition. Goodheart-Wilcox.

NOTE: These are the standard Sheet Metal textbooks/workbooks used for this course. Although they may not be within 5 years of the required published date, they are the most current books used when teaching this course.

## Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

- Readings from textbook on leak testing a refrigerant system

- Writing assignments given in the laboratory

- Create an schematic diagram of a typical furnace electrical circuit and suggest describe troubleshooting sequence for assigned problems

## Discipline(s)

Air Conditioning, Refrigeration, Heating