



## Apprenticeship - Sheet Metal 2013-2014

The Sheet Metal trade is unique because it is one of the few crafts that starts with raw material, creates a component, installs and maintains the product. Using a combination of mathematics, layout tools, hammers, drills, hacksaws, plasma and laser beam cutting systems, computers, cutting, forming, seaming or welding machines, workers manipulate the material into the product desired. The maintenance sector includes preventive maintenance, repair, testing, balancing and sometimes certification of the installed systems. Items commonly fabricated and installed include HVAC systems, metal roofs, kitchen hoods, various flashings, gutters, decorative architectural features and many other items made of a variety of metals. It is an interesting and evolving field with exciting growth potential. The apprenticeship is an earn-while-you-learn program involving paid "full time" work and related classes.

### Program Learning Outcomes:

Students are prepared with the skills and expertise to detail, fabricate and install a variety of Sheet Metal products in compliance with applicable standards and codes. These highly demanded skills are acquired through on-the-job training (OJT) and lead to employment in the construction industry. After 5 years of classroom and work experience students are recognized as journeypersons within the Sheet Metal industry.

### Career Opportunities:

Upon completion of all course requirements listed below and 6500 hours of related work experience, graduates will be recognized as specialist in the Sheet Metal Building Trades field. Depending upon the student's career interest and courses taken, graduates find employments as: Sheet Metal Worker, Site Foreman, HVAC Service Technician, Sheet Metal Fabricator, Sheet Metal Ship Yard Worker, Air Conditioning Specialist, Sheet Metal Specialist, Decking, Siding & Metal Building Worker, Air Conditioning Mechanic, Sheet Metal Building Inspector, Test, Adjust & Balancing Technician, Service Mechanic, Service Technician, Air Conditioning Specialist.

**Units required for Major: 55.5**

**Units required for Certificate: 7.5-55.5**

### Associate Degree Requirements:

- English proficiency: ENGL 1A, 1AH, 1S & 1T, ESSL 26 or equivalent.
- Mathematics proficiency: MATH 57, 105, 108 or equivalent.

A minimum of 90 units is required\* to include:

- All Foothill General Education requirements (30 Units)
- Core courses (55.5 units)

\*Additional elective course work may be necessary to meet the 90-unit minimum requirement for the associate degree.

### Program Types:

**AS = Associate in Science Degree.**

**CA = Certificate of Achievement.**

**CCC = Career Certificate [Non-Transcriptable].**

### Additional Information:

Prerequisites: Admission to the Sheet Metal Apprenticeship Program; current employment in the sheet metal trades industry.

### Core Courses: 55.5 Unit(s)

APSM 101 SMQ-1 Trade Introduction (1.5 units)

APSM 102 SMQ-2 Certified Safety & Beginning Trade Math (1.5 units)

APSM 103 SMQ-3 Sheet Metal Tools & Shop (1.5 units)

APSM 104 SMQ-4 Soldering & Common Seams (1.5 units)

APSM 105 SMQ-5 Drafting Introduction & Views (1.5 units)

APSM 106 SMQ-6 Beginning Duct Fittings (1.5 units)

APSM 107 SMQ-7 Parallel Line Fittings (1.5 units)

APSM 108 SMQ-8 Triangulation Fittings (1.5 units)

APSM 109 SMQ-9 Radial Line Layout & Ogee Offsets (1.5 units)

APSM 110 SMQ-10 Basics of Architectural Sheet Metal (1.5 units)

APSM 111 SMQ-11 Architectural Sheet Metal (1.5 units)

APSM 112 SMQ-12 Field Installation (1.5 units)

APSM 113 SMQ-13 Welding 1: Process & Safety Overview (1.5 units)

APSM 114 SMQ-14 Welding 2: GMAW (1.5 units)

APSM 115 SMQ-15 Welding 3: GMAW (1.5 units)

APSM 116 SMQ-16 Plans & Specifications (1.5 units)

APSM 117 SMQ-17 Submittals & Shop Drawings (1.5 units)

APSM 118 SMQ-18 Industrial & Stainless Steel Introduction (1.5 units)

APSM 119 SMQ-19 HVAC Air Systems & Duct Design (1.5 units)

APSM 120 SMQ-20 Measuring & Sketching (1.5 units)

APSM 121 SMQ-21 Fabrication & Shortcuts (1.5 units)

APSM 122 SMQ-22 Codes & Standards (1.5 units)

APSM 123 SMQ-23 Residential Sheet Metal (1.5 units)

APSM 124 SMQ-24 Metal Roofing (1.5 units)

APSM 125 SMQ-25 Detailing (1.5 units)

APSM 126 SMQ-26 Foreman Training (1.5 units)

APSM 127 SMQ-27 Basic AutoCAD (1.5 units)

APSM 128 SMQ-28 HVAC Energy Conservation & Environmental Technology (1.5 units)

APSM 130 SMQ-30 Advanced Welding (1.5 units)

APSM 131 SMQ-31 CAD Detailing (Beginning CAD Duct) (1.5 units)

APSM 132 SMQ-32 Intermediate CAD Detailing (1.5 units)

APSM 133 SMQ-33 Advanced Architectural (1.5 units)

APSM 134 SMQ-34 Advanced Layout Fabrication (1.5 units)

APSM 135 SMQ-35 Project Management, Takeoffs & Estimates (1.5 units)



APSM 136 SMQ-36 Service Basics (1.5 units)  
APSM 137 SMQ-37 Final HVAC Project (1.5 units)  
APSM 138 SMQ-38 Final Architectural, Industrial,  
Ornamental Project (1.5 units)

**Certificates:**

**Certificate of Achievement in Sheet Metal Building**

**Trades**

**55.5 Unit(s)**

The Certificate of Achievement is awarded upon completion of the core courses. General education courses are not required.

**Sheet Metal Decking & Siding Career Certificate**

**18 Unit(s) [Non-Transcriptable]**

APRT 155A Safety & Tools for Sheet Metal Siding & Decking Apprentices (4.5 units)  
APRT 155B Blueprint Reading for Sheet Metal Siding & Decking Apprentices (4.5 units)  
APRT 156A Welding for Sheet Metal Siding & Decking Apprentices (4.5 units)  
APRT 156B Measuring, Drawing & Lifting Devices for Sheet Metal Siding & Decking Apprentices (4.5 units)

**Sheet Metal Air Conditioning Service Technician Career Certificate**

**10 Unit(s) [Non-Transcriptable]**

APRT 140A Electrical Basics for Residential HVAC Service I (2.5 units)  
APRT 140B Refrigeration Basics for Residential HVAC Service (2.5 units)  
APRT 141A Components of Residential HVAC Service (2.5 units)  
APRT 141B Troubleshooting Diagnosis & Repair for Residential HVAC Service (2.5 units)

**Sheet Metal Air Conditioning Specialist Career Certificate**

**10 Unit(s) [Non-Transcriptable]**

APPR 188A Orientation; Safety & Beginning Residential Sheet Metal Installation (Specialist 1A) (2.5 units)  
APPR 188B Residential Components Identification & Installation (Specialist 1B) (2.5 units)  
APPR 189A Residential Systems; Duct & HVAC Systems (Specialist 2A) (2.5 units)  
APPR 189B Plans & Architectural Applications for Residential Sheet Metal (Specialist 2B) (2.5 units)

**Sheet Metal Ship Yard Specialist Career Certificate**

**7.5 Unit(s) [Non-Transcriptable]**

APRT 144A Introduction to Marine Sheet Metal Training for Apprentices I (2.5 units)  
APRT 144B Introduction to Marine Sheet Metal Training for Apprentices II (2.5 units)  
APRT 151A Intermediate Marine Sheet Metal Training for Apprentices I (2.5 units)