

# APPRENTICESHIP - GENERAL ELECTRICIAN

## Program Description

The General Electrician program consists of a comprehensive course of study necessary for career success as a General Electrician. This program is intended to meet the "whole program status" as required by the Department of Apprenticeship Standards. Graduates will have acquired the knowledge and skills needed to function as general electricians including foundation sciences, mathematics, safety, plan and code reading, as well as necessary job based skills. Upon completion of required work experience and hours, graduates will be qualified to take the State certification examination and work as electricians. Career opportunities for qualified general electricians in the construction trades are very diverse. Depending on the student's career interest and courses taken, graduates find employment as General Electricians in commercial, industrial, and residential areas, voice data video technicians, fire/life safety technicians, or non-residential lighting technicians.

The Residential Wireman program is offered in partnership with Santa Clara County Electrical Joint Apprenticeship Training Committee. This 3-year apprenticeship program provides students with paid on-the-job training and in-class instruction with no tuition fee. The students will learn how to install and connect electrical systems in homes, condos and apartments, and how to maintain basic electrical and power distribution systems within a residential environment.

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

## Program Learning Outcomes

Students gain hands-on experience as they work on electrical systems and component wiring to include: power distribution systems, electrical panels, wiring, conduit, piping, test equipment, transformers, motors, grounding, over-current protection, security, solar and home automation systems. These specialized skills are acquired through on-the-job training and classroom instruction and lead to employment in the construction and service industry. After five years of classroom and work experience, students who pass the state license exam are recognized as journeymen in the electrical trades industry.

Residential Wireman students will be able to identify the tools and the materials used in residential wiring, to calculate values using Ohm's Law in D/C series, parallel and combination circuits, to identify architectural and mechanical symbols on residential drawings, and to read and to analyze blueprints, diagram structured wiring systems.

## Career Opportunities

Upon completion of all course requirements and 8,000 hours of related work experience for a Inside Wireman, graduates will be eligible for the State certified Electrician Examination. Depending on the student's career interest and courses taken, graduates find employment as General Electricians in commercial, industrial, and residential areas, voice data video technicians, fire/life safety technicians, solar and photovoltaic installers and non-residential lighting technicians.

Upon completion of all course requirements and 4000 hours for Residential Wireman, graduates will be eligible for the State Electrician certification and will be eligible to receive a Certificate of Achievement in Residential Wireman from Foothill College and an Apprenticeship

Completion Certificate from the California Division of Apprenticeship Standards (DAS). Depending on the student's career interest, graduates find employment as residential electrician, foreman, contractor, and educator.

## Award Type(s)

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

## Units Required

- Major: 40-46
- Certificate(s): 18-46

## 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
ENGL 1S & ENGL 1T	INTEGRATED COMPOSITION & READING and INTEGRATED COMPOSITION & READING	8
or equivalent		
<b>Mathematics Proficiency</b>		
Select one of the following:		
MATH 105	INTERMEDIATE ALGEBRA	5
MATH 180	QUANTITATIVE REASONING	5
or any MATH course approved for Foothill GE Area V, Communication & Analytical Thinking		

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 (40-46 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 certificates.

## Core and Support Courses

Code	Title	Units
<b>Core Courses</b>		
APEL 120 or APEL 120A	ORIENTATION TO THE ELECTRICAL TRADE ORIENTATION TO THE ELECTRICAL TRADE, CPR & FIRST AID	4-5
APEL 121 or APEL 121A	ELECTRON THEORY; BASIC BLUEPRINT READING; DC THEORY; NATIONAL ELECTRICAL CODE INTRODUCTION ELECTRON THEORY; AC & DC ELECTRICAL THEORY; NEC INTRODUCTION; PARALLEL & COMBINATION CIRCUITS	4-5

APEL 122	CODEOLOGY; TEST EQUIPMENT; PIPE BENDING; BLUEPRINTS	4-5
or APEL 122A	CODEOLOGY; NEC CODE; TEST EQUIPMENT; PIPE BENDING; BLUEPRINTS	
APEL 123	AC THEORY; TRANSFORMERS; INTERMEDIATE NATIONAL ELECTRICAL CODE	4-5
or APEL 123A	GROUNDING & BONDING, OVERCURRENT PROTECTION, CODE & PRACTICES, BLUEPRINTS, CODEOLOGY SKILLS	
APEL 124	DC/AC THEORY REVIEW; ELECTRONICS; INDUSTRIAL BLUEPRINTS	4-5
or APEL 124A	DC/AC THEORY REVIEW; ELECTRONICS; INDUSTRIAL BLUEPRINTS; TRANSFORMERS, GROUNDING; ELECTRICAL SYSTEMS	
APEL 125	NEC GROUNDING; OVERCURRENT PROTECTION; TRANSFORMER CONNECTIONS	4-5
or APEL 125A	FIRE ALARM SYSTEMS, EMERGENCY COMMUNICATION SYSTEMS, PUBLIC EMERGENCY SYSTEMS	
APEL 126	MOTORS; MOTOR CONTROL; LIGHTING PROTECTION	4
APEL 127	DIGITAL ELECTRONICS; MOTOR SPEED CONTROL; ADVANCED NATIONAL ELECTRICAL CODE	4
APEL 128	PROGRAMMABLE LOGIC CONTROLLERS; LOW- VOLTAGE SYSTEMS & HIGH-VOLTAGE SYSTEMS	4
APEL 129	NATIONAL ELECTRICAL CODE REVIEW	4
<b>Total Units</b>		<b>40-46</b>

## Certificate Requirements

### Certificate of Achievement in Inside Wireman

- Units: 40-46

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

Currently offered at: San Francisco and San Jose.

### Certificate of Achievement in Residential Wireman

- Units: 18

Code	Title	Units
APEL 112	RESIDENTIAL ELECTRICAL AIR CONDITIONING & REFRIGERATION; TELEPHONE SYSTEMS	3
APEL 113	RESIDENTIAL ELECTRICAL SYSTEMS: BASIC SECURITY, SOLAR POWER, HOME AUTOMATION & LIFE SAFETY	3
APEL 135	RESIDENTIAL ELECTRICAL ORIENTATION; SAFETY & CODE INTRODUCTION	3
APEL 136	RESIDENTIAL ELECTRICAL D/C THEORY; BLUEPRINT READING	3
APEL 137	RESIDENTIAL ELECTRICAL A/C THEORY & CIRCUITRY	3
APEL 138	RESIDENTIAL WIRING LAYOUT & INSTALLATION	3
<b>Total Units</b>		<b>18</b>

Currently offered at: San Jose.