

# APEL 135: RESIDENTIAL ELECTRICAL ORIENTATION; SAFETY & CODE INTRODUCTION

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	3
<b>Hours:</b>	24 lecture, 51 laboratory per quarter (75 total per quarter)
<b>Prerequisite:</b>	Per California Code of Regulations, this course is limited to students admitted to the Electrical Apprenticeship Program.
<b>Advisory:</b>	Not open to students with credit in APRT 135.
<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 successful student will be able to identify the different types of wiring in a residential installation.
- A successful student will be able to utilize the National Electrical Code to describe the purpose of the NEC.

## Description

Orientation to the electrical industry with a residential emphasis; on-the-job safety; identification of tools and materials; review of basic math. Introduction to the National Electrical Code.

## Course Objectives

The student will be able to:

- Discuss and apply the JATC rules and regulations.
- Apply basic math as related to the electrical trade.
- Practice safe work procedures.
- Recognize and explain the National Electrical Code.
- Identify the tools and materials used in residential wiring.

## Course Content

- Orientation to the electrical industry
  - JATC policies and procedures
  - Working in the electrical industry
- Basic math
  - Fractions
  - Equations
  - Prefixes
  - Ratios and proportions
- Safety
  - On-the-job concerns

2. Tool safety
3. Electrical safety
- D. National Electrical Code
  1. Pool, fountains and similar locations
  2. Communication circuits
- E. Residential tools and materials
  1. Tools
  2. Materials
  3. Equipment

## Lab Content

Students will work individually and in teams on proper wiring and grounding of electrical systems. Safe working practices for on-the-job training include:

- Equipment safety
- Fire protection
- Electrostatic Discharge (ESD)
- Safe handling practices

## Special Facilities and/or Equipment

Laboratory with electrical tools and equipment.

## Method(s) of Evaluation

- Results of written quizzes and average of six tests
- Results of hands-on projects and homework
- Results of class participation
- Maintenance of a student's workbook with questions drawn from text

## Method(s) of Instruction

- Lecture
- Lab Assignments
- Group Discussion
- Demonstration

## Representative Text(s) and Other Materials

Klein, Stan, and John McCord. [AC Theory](#). Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2009.

Klein, Stan, and Jim Paladino. [DC Theory](#). Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2009.

Mullin, Ray. [Electrical Wiring Residential](#). Albany, NY: Delmar/Thompson Learning, 2009.

National Joint Apprenticeship and Training Committee for the Electrical Industry. [Mathematics Essential for NJATC Courses](#). 2nd ed. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2012.

National Fire Protection Association. [National Electrical Code](#). Quincy, MA: National Fire Protection Association Inc., 2014.

National Joint Apprenticeship and Training Committee for the Electrical Industry. [Applied Codeology](#). Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2009.

National Joint Apprenticeship and Training Committee for the Electrical Industry. Conduit Bending and Fabrication. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2009.

National Joint Apprenticeship and Training Committee for the Electrical Industry. Air Conditioning and Refrigeration. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2009.

National Joint Apprenticeship and Training Committee for the Electrical Industry. NEC Code Calculations. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2011.

National Joint Apprenticeship and Training Committee for the Electrical Industry. NJATC Fire Alarm Text. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee for the Electrical Industry, 2010.

Although one or more of these texts may be older than the suggested "5 years or newer" standard, it remains a seminal text in this area of study.

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

A. Reading Assignments: Weekly reading assignments from text and outside sources.

B. Lecture: Weekly lecture covering subject matter from text assignment with extended topic information.

C. Laboratory Exercises and Demonstrations: Weekly lab exercises. Each lab exercise may include individual or group participation.

## **Discipline(s)**

Electricity