

APEL 138: RESIDENTIAL WIRING LAYOUT & INSTALLATION

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	3
Hours:	24 lecture, 51 laboratory per quarter (75 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Electrical Apprenticeship Program.
Advisory:	Not open to students with credit in APRT 138.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- A successful student will be able to layout and wire a basic kitchen.
- A successful student will be able to layout and wire a bedroom and hallway.

Description

Study of electrical wiring methods, circuitry, and conduit installation in residential applications. Students practice wiring layout for residential housing. Continued study of the National Electrical Code as it relates to circuits, grounding, and cable assemblies.

Course Objectives

The student will be able to:

1. Demonstrate the ability to layout wiring systems
2. Diagram structured wiring systems
3. Discuss and appraise various residential wiring methods
4. Assess the circuitry requirements for individual residential rooms and homes
5. Use the National Electrical Code in residential wiring applications

Course Content

1. Residential wiring methods
 - a. General installation requirement
 - b. Motor control
 - c. Air conditioning systems
 - d. Heating systems
2. Structured wiring

- a. TV and telephone systems
 - b. Security systems
 - c. Fire alarm systems
 - d. LonWks
3. Residential wiring methods
 - a. Basic conduit bending
 - b. Offsets
 - c. Saddles
 4. Residential circuitry
 - a. General living area
 - b. Bathrooms and exterior
 - c. Kitchens and washrooms
 - d. Voltage
 5. National Electric Code
 - a. Services
 - b. Cable assemblies
 - c. Main, feeder, and branch circuits
 - d. Grounding

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:

1. Equipment safety
2. Fire protection
3. Electrostatic discharge (ESD)
4. Safe handling practices

Special Facilities and/or Equipment

Laboratory with electrical tools and equipment.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

- 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

Methods of Instruction may include but are not limited to the following:

- Lecture
- Lab assignments
- Group discussion
- Demonstration

Representative Text(s) and Other Materials

Callanan, Michael, and Bill Wusinich. Electrical Systems Based on the 2020 NEC. 2020.

Electrical Training ALLIANCE. Applied Codeology Navigating the 2020 NEC. 2020.

Klein, Stan, and John McCord. AC Theory, 3rd ed.. 2011.

National Fire Protection Association. National Electrical Code. 2019.

Although one or more of these texts is 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

1. Weekly reading assignments from text and outside sources
2. Weekly lecture covering subject matter from text assignment with extended topic information
3. Weekly lab exercises. Each lab exercise may include individual or group participation

Discipline(s)

Electricity