**APED 222.2 Course Outline as of Summer 2025**

# CATALOG INFORMATION

Dept and Nbr: APED 222.2 Title: APP ELECTRICIANS 2ND SEM
Full Title: Apprentice Electricians, Second Semester
Last Reviewed: 3/28/2022

| Units | | Course Hours per Week | | Nbr of Weeks | Course Hours Total | |
|---|---|---|---|---|---|---|
| Maximum | 4.00 | Lecture Scheduled | 3.00 | 17.5 | Lecture Scheduled | 52.50 |
| Minimum | 4.00 | Lab Scheduled | 0 | 4 | Lab Scheduled | 0 |
| | | Contact DHR | 3.00 | | Contact DHR | 52.50 |
| | | Contact Total | 6.00 | | Contact Total | 105.00 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 105.00 Total Student Learning Hours: 210.00

| | |
|---|---|
| Title 5 Category: | AA Degree Applicable |
| Grading: | Grade Only |
| Repeatability: | 00 - Two Repeats if Grade was D, F, NC, or NP |
| Also Listed As: | |
| Formerly: | APED 220.2 |

**Catalog Description:**
Students will be introduced to training related to electrician indentured apprenticeship. This is the second semester of a ten-semester program.

**Prerequisites/Corequisites:**

**Recommended Preparation:**
Course Completion of APED 220.1

**Limits on Enrollment:**
Indentured apprentice - apply and be accepted by the Redwood Empire Joint Apprenticeship & Training Committee (REJATC)

**Schedule of Classes Information:**
Description: Students will be introduced to training related to electrician indentured apprenticeship. This is the second semester of a ten-semester program. (Grade Only)
Prerequisites/Corequisites:
Recommended: Course Completion of APED 220.1
Limits on Enrollment: Indentured apprentice - apply and be accepted by the Redwood Empire Joint Apprenticeship & Training Committee (REJATC)

Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

## ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

| | | | |
|---|---|---|---|
| **AS Degree:** | **Area** | Effective: | Inactive: |
| **CSU GE:** | **Transfer Area** | Effective: | Inactive: |
| **IGETC:** | **Transfer Area** | Effective: | Inactive: |

| | | |
|---|---|---|
| **CSU Transfer:** | Effective: | Inactive: |
| **UC Transfer:** | Effective: | Inactive: |

**CID:**

**Certificate/Major Applicable:**
Certificate Applicable Course

## COURSE CONTENT

**Student Learning Outcomes:**
At the conclusion of this course, the student should be able to:
1. Describe and demonstrate electrical principles and regulations related to electricians' trade.
2. Apply best practices in practical environment related to electricians' trade.

**Objectives:**
At the conclusion of this course, the student should be able to:
1. Describe and demonstrate understanding of basic Direct Current (DC) theory including energy sources, electrical switches, function of conductors, and wattage loss.
2. Describe and demonstrate understanding of current reactions and hazards of DC series circuits.
3. Calculate power in DC series circuits and correctly draw basic circuits.
4. Demonstrate basic functions and uses of test instruments.
5. Describe and demonstrate key principles and apply to DC parallel circuits and DC combination circuits.
6. Demonstrate how to calculate power in DC parallel circuits and DC combination circuits.
7. Recognize and demonstrate the ability to draw and understand the proper use of blueprint symbols and specifications.
8. Demonstrate the ability to read, analyze, and properly use a residential blueprint.

**Topics and Scope:**

I. DC Theory, Level I
   A. What is electricity?
   B. Electrical energy sources
   C. Electrical switches
   D. Conductors, conductor resistance, and wattage loss
   E. Introduction to electrical devices
   F. Current, voltage, and resistance in a circuit
   G. The electrical circuit and Ohm's Law

H. Power in a circuit

II. DC Theory, Level II
A. The series circuit
B. Understanding and calculating resistance in DC series circuits
C. How current reacts in DC series circuits
D. How voltage functions in DC series circuits
E. How to calculate power in DC series circuits
F. Energized circuits and the potential hazards they possess
G. How to draw basic electrical circuits correctly
H. Introduction to test instruments

III. DC Theory, Level III
A. How current reacts in DC parallel circuits
B. Understanding resistance in DC parallel circuits
C. Working with ratios and proportion
D. How voltage functions in DC parallel circuits
E. How to calculate power in DC parallel circuits

IV. DC Theory, Level IV
A. Understanding resistance in DC combination circuits
B. How current reacts in DC combination circuits
C. How voltage functions in DC combination circuits
D. How to calculate power in DC combination circuits
E. How voltage and current dividers work
F. The design and operation of the 3-wire, single-phase system

V. Blueprints, Level I
A. The fundamentals of blueprint drawing and how to make proper sketches
B. Understanding architectural views and how to draw them
C. Recognizing and understanding common scales used on blueprints
D. Instructional Continuity Plan (ICP) 1: Math for blueprint reading
E. Using blueprints specifications, elevations and schedules properly
F. Understanding and drawing electrical symbols used on blueprints
G. Understanding and drawing mechanical symbols used on blueprints
H. Understanding how to properly use a residential blueprint
I. Reading and analyzing a residential blueprint

**Assignment:**

1. Homework assignments (1-2 sets per week)
2. Quizzes and examinations (4-6 per semester)
3. Hands-on Craft Certification skills exam (students must pass in order to complete the course)
4. Written final exam (students must pass in order to complete the course)
5. Class performances and field work (on-the-job demonstrations) of skill development, safety practices, equipment, and material handling

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

| | |
|---|---|
| None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course. | Writing<br>0 - 0% |

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

| | |
|---|---|
| Homework assignments; field work | Problem solving<br>5 - 10% |

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

| | |
|---|---|
| Class performances; field work | Skill Demonstrations<br>40 - 45% |

**Exams:** All forms of formal testing, other than skill performance exams.

| | |
|---|---|
| Quizzes and examinations, Craft Certification skills exam, final exam | Exams<br>40 - 45% |

**Other:** Includes any assessment tools that do not logically fit into the above categories.

| | |
|---|---|
| Attendance and participation | Other Category<br>5 - 10% |

**Representative Textbooks and Materials:**
National Fire Protection Association (NFPA) 70 National Electrical Code (NEC) - 2017 Handbook Catalog Order No: S950 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2017
DC Theory Textbook Catalog Order No: S640 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2009 (classic)
Test Instruments and Applications Textbook, 2nd edition Catalog Order No: S571 in the Electrical Training Alliance 2020 Training Essentials Catalog. American Technical Publishers. 2018
Building a Foundation in Mathematics Textbook Catalog Order No: S665 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2010 (classic)
National Fire Protection Association 70 National Electrical Code - 2020 Handbook Catalog Order No: S1050 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2020
Electrical Systems Based on the 2020 NEC Textbook Catalog Order No: S1070 in the Electrical Training Alliance 2020 Training Essentials Catalog. American Technical Publishers. 2020
Blueprint Reading for Electricians Textbook Catalog Order No: S648 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2010 (classic)
Residential Blueprints Catalog Order No: S135.H in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2020